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4 STIMULANTS

WORLD DRUG REPORT 2019

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PREFACE

The findings of this year's *World Drug Report* fill in and further complicate the global picture of drug challenges, underscoring the need for broader international cooperation to advance balanced and integrated health and criminal justice responses to drug supply and demand.

With improved research and more precise data from India and Nigeria – both among the 10 most-populous countries in the world – we see that there are many more opioid users and people with drug use disorders than previously estimated. Globally, some 35 million people, up from an earlier estimate of 30.5 million, suffer from drug use disorders and require treatment services. The death toll is also higher: 585,000 people died as a result of drug use in 2017.

Prevention and treatment continue to fall far short of needs in many parts of the world. This is particularly true in prisons, where those incarcerated are especially vulnerable to drug use and face higher risks of HIV and hepatitis C transmission. This gap represents a major impediment to achieving the Sustainable Development Goals and fulfilling the international community's pledge to leave no one behind.

Synthetic opioids continue to pose a serious threat to health, with overdose deaths rising in North America and trafficking in fentanyl and its analogues expanding in Europe and elsewhere. The opioid crisis that has featured in far fewer headlines but that requires equally urgent international attention is the non-medical use of the painkiller tramadol, particularly in Africa. The amount of tramadol seized globally reached a record 125 tons in 2017; the limited data available indicate that the tramadol being used for non-medical purposes in Africa is being illicitly manufactured in South Asia and trafficked to the region, as well as to parts of the Middle East.

The response to the misuse of tramadol illustrates the difficulties faced by countries in balancing necessary access for medical purposes while curbing abuse – with limited resources and health-care systems that are already struggling to cope – and at the same time clamping down on organized crime and trafficking.

Opium production and cocaine manufacture remain at record levels. The amounts intercepted are also higher than ever, with the amount of cocaine seized up 74 per cent over the past decade, compared with a 50 per cent rise in manufacture during the same period. This suggests that law enforcement efforts have become more effective and that strengthened international cooperation may be helping to increase interception rates.

The *World Drug Report 2019* also registers a decline in opiate trafficking from Afghanistan along the "northern" route through Central Asia to the Russian Federation. In 2008, some 10 per cent of the morphine and heroin intercepted globally was seized in countries along the northern route; by 2017 it had fallen to 1 per cent. This may be due in part to a shift in demand to synthetics in destination markets. The increased effectiveness of regional responses may also play a role.

Countries in central Asia, with the support of the United Nations Office on Drugs and Crime (UNODC), have committed considerable resources to strengthening regional cooperation through integrated UNODC country, regional and global programmes, as well as through platforms such as the Central Asian Regional Information and Coordination Centre, the Afghanistan–Kyrgyzstan–Tajikistan Initiative and the Triangular Initiative and its Joint Planning Cell. More research is needed, including to identify lessons learned and best practices that could inform further action.

International cooperation has also succeeded in checking the growth in new psychoactive substances. The Vienna-based Commission on Narcotic Drugs has acted swiftly in recent years to schedule the most harmful new psychoactive substances, and the UNODC early warning advisory has helped to keep the international community abreast of developments.

Political will and adequate funding remain prerequisites for success. Efforts by Colombia to reduce cocaine production following the 2016 peace deal

with the Revolutionary Armed Forces of Colombia (FARC) are a case in point. Alternative development initiatives have enabled farmers in central areas of the country previously under FARC control to abandon coca bush cultivation and join the licit economy. The result has been a drastic reduction in cocaine production. However, in other areas previously controlled by FARC, criminal groups have moved in to fill the vacuum and expand cultivation. Alternative development can succeed, but not without sustained attention and integration into broader development goals.

The successes identified amid the many, formidable problems that countries continue to face in grappling with drug supply and demand highlight that international cooperation works. The challenge before us is to make this cooperation work for more people.

International cooperation is based on agreed frameworks. Nearly every country in the world has reaffirmed its commitment to balanced, rights-based action based on the international drug control conventions. The most recent reaffirmation of that commitment is the Ministerial Declaration on Strengthening Our Actions at the National, Regional and International Levels to Accelerate the Implementation of Our Joint Commitments to Address and Counter the World Drug Problem, adopted at the ministerial segment of the sixty-second session of the Commission on Narcotic Drugs.

UNODC supports countries in putting their commitments into action through the application of international standards on the prevention and treatment of drug use disorders and HIV, as well as standards and norms on the administration of justice and the treatment of prisoners. We provide tailored technical assistance through our field offices and global programmes, and through toolkits and research.

I hope the *World Drug Report 2019* will shed further light on the world drug problem and inform international community responses. By working together and focusing attention and resources, we can help people get the services they need without discrimination, promote security and bring criminals to justice, safeguard health and achieve the Sustainable Development Goals.

Yury Fedotov
Executive Director
United Nations Office on Drugs and Crime

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EXPLANATORY NOTES

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations. A dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Disputed boundaries (China/India) are represented by cross-hatch owing to the difficulty of showing sufficient detail.

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Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

All references to Kosovo in the *World Drug Report*, if any, should be understood to be in compliance with Security Council resolution 1244 (1999).

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral term "drug use" is used in the *World Drug Report*. The term "misuse" is used only to denote the non-medical use of prescription drugs.

All uses of the word "drug" and the term "drug use" in the *World Drug Report* refer to substances controlled under the international drug control conventions, and their non-medical use.

All analysis contained in the *World Drug Report* is based on the official data submitted by Member States to the UNODC through the annual report questionnaire unless indicated otherwise.

The data on population used in the *World Drug Report* are taken from: *World Population Prospects: The 2017 Revision* (United Nations, Department of Economic and Social Affairs, Population Division).

References to dollars ($) are to United States dollars, unless otherwise stated.

References to tons are to metric tons, unless otherwise stated.

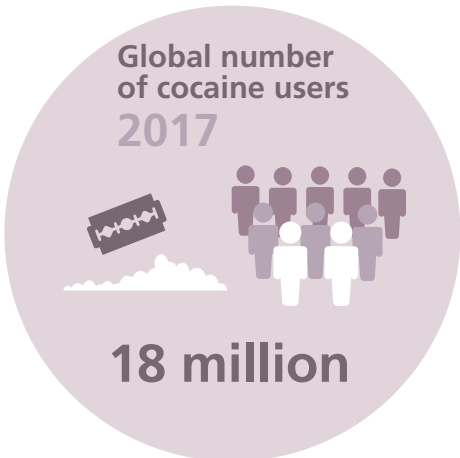
The following abbreviations have been used in the present booklet:

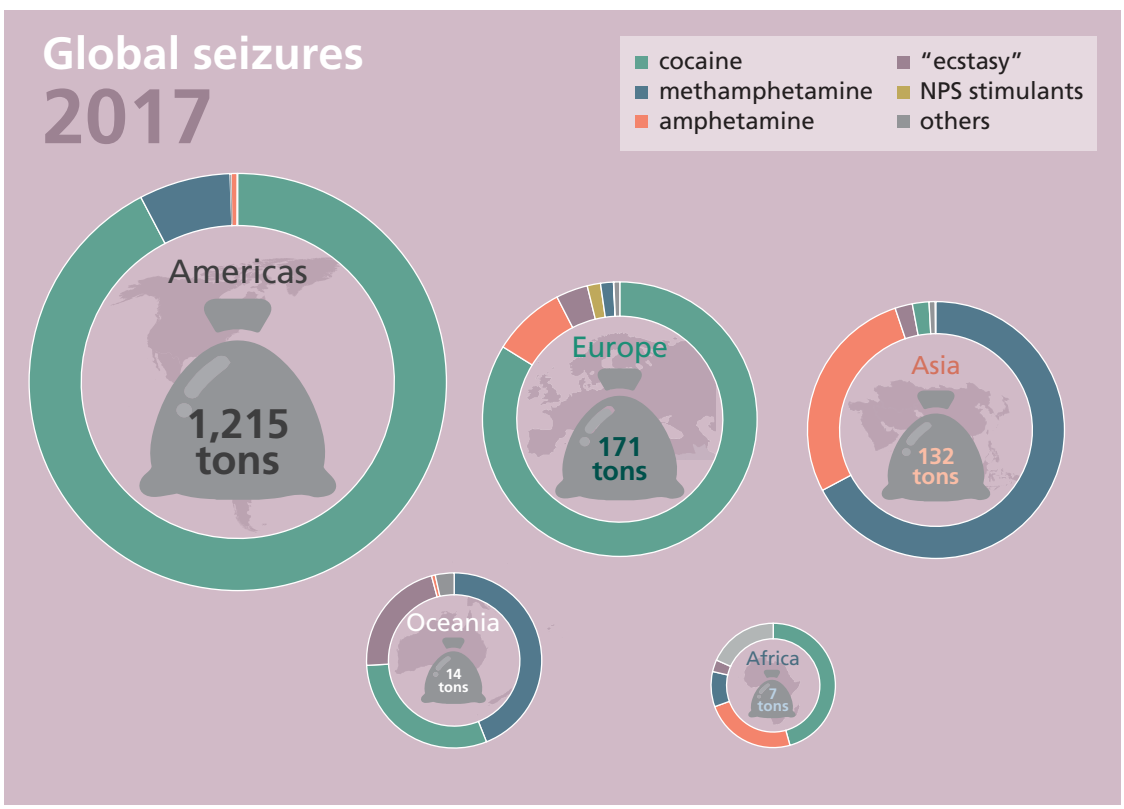
2CB	2,5-dimethoxy-4-bromophenethylamine
3-MMC	3-methylmethcathinone
4-FA	4-fluoroamphetamine
ATS	amphetamine-type stimulants
DAINAP	Drug Abuse Information Network for Asia and the Pacific
DEA	Drug Enforcement Administration of the United States
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
FARC-EP	Revolutionary Armed Forces of Colombia-People's Army
GBL	*gamma*-butyrolactone
GHB	*gamma*-hydroxybutyrate
HCl	hydrochloride
INCB	International Narcotics Control Board
MDA	methylenedioxyamphetamine
MDEA	methylenedioxyethamphetamine
MDMA	3,4-methylenedioxymeth-amphetamine
MDPV	methylenedioxypyrovalerone
MedSPAD	Mediterranean School Survey Project on Alcohol and other Drugs
MT-45	1-cyclohexyl-4-(1,2-diphenyl-ethyl)piperazine
NPS	new psychoactive substances

P-2-P	phenyl-2-propanone
PMA	para-methoxyamphetamine
PMMA	para-methoxymethamphetamine
PNIS	National Comprehensive Programme for the Voluntary Substitution of Illicit Crops of Colombia
SAMHSA	Substance Abuse and Mental Health Services Administration
SCORE	Sewage Analysis CORE Group Europe
SEDRONAR	Ministry of Programming for the Prevention of Drug Addiction and Trafficking in Drugs
SENDA	National Service for the Prevention and Rehabilitation of Drug and Alcohol Use
UNODC	United Nations Office on Drugs and Crime

SCOPE OF THE BOOKLET

This booklet, the fourth chapter of the *World Drug Report 2019*, provides analysis of recent trends in the market for stimulants, which include cocaine, amphetamine-type stimulants and new psychoactive substances with stimulant effects. Substances of either a plant-based or synthetic nature, stimulants increase alertness, heighten arousal and cause behavioural excitement. The early focus of the booklet is on supply of and demand for cocaine, before turning to emerging issues and trends in the consumption and trafficking of amphetamine-type stimulants, including methamphetamine, amphetamine, pharmaceutical stimulants and "ecstasy". The final part of the booklet looks at supply of and demand for stimulant new psychoactive substances.





STIMULANT DRUGS

Stimulants, or psychostimulants, are a class of drugs that act on the central nervous system and increase alertness, heighten arousal and cause behavioural excitement.[1] Their general mechanism of action is an increase in the activation of natural stimulating pathways in the brain, which in particular enhances the function of the three main monoamine neurotransmitters: dopamine, norepinephrine and serotonin.[2]

Psychostimulants can be plant-based substances: for example, cocaine and "crack" cocaine (derived from the coca leaf), ephedrine and pseudoephedrine (ephedra), and cathinone (khat). They can also be of a synthetic nature: for example, amphetamine and methamphetamine; "ecstasy"-group substances, such as MDMA(3,4-methylene-dioxymethamphetamine), MDA (3,4-methylenedioxyamphetamine) and MDEA(3,4-methylenedioxyethylamphetamine); and synthetic cathinones, such as mephedrone, MDPV(methylenedioxypyrovalerone) and methylone.

Some psychostimulants have been approved for medical use; others, such as synthetic cathinones (mephedrone, MDPV and methylone) have not.[3] Some psychostimulants are controlled under the international drug control conventions (e.g., cocaine, amphetamine, methamphetamine and MDMA), with different levels of scheduling; others are not internationally controlled and are referred to as NPS. Amphetamine and its different isomers have an established medical use for treating conditions such as attention deficit hyperactivity disorder and narcolepsy, a sleep disorder; it can also be used as an appetite suppressant.[4] In recent years, a number of stimulant NPS have emerged in the market. Since 2009, stimulants have comprised the main category

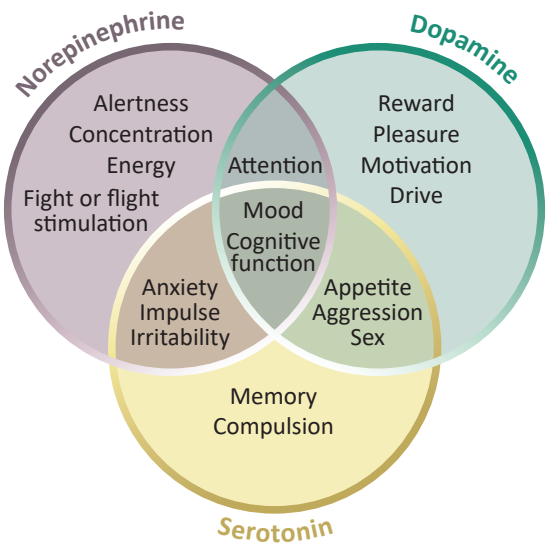
1 Jerrold S. Meyer and Linda F. Quenzer, *Psychopharmacology: Drugs, the Brain, and the Behavior*, 3rd ed. (Oxford, Oxford University Press, 2019).

2 *Terminology and Information on Drugs* (United Nations publication, Sales No. E.16.XI.8).

3 Ibid.

4 David J. Heal and others, "Amphetamine, past and present: a pharmacological and clinical perspective", *Journal of Psychopharmacology*, vol 27, No. 6 (June 2013), pp. 479–496.

FIG. 1 Behavioural effects mediated by the three main neurotransmitters



Source: Terminology and Information on Drugs (United Nations publication, Sales No. E.16.XI.8).

(36 per cent) of NPS reported to the UNODC early warning advisory.

Amphetamine and methamphetamine produce predominantly stimulant effects as a result of their influence on the levels of dopamine and norepinephrine, and, to a lesser extent, on serotonin.[5] The effects of cocaine are similar to those of amphetamine and methamphetamine, except that cocaine has a more pronounced effect on the level of dopamine than of amphetamine or methamphetamine. MDMA, on the other hand, has more pronounced effects on the serotonin system, which results in different pharmacological effects.[6]

Patterns of stimulant use

After cannabis, stimulants constitute the second most widely used category of drugs globally and – polydrug use notwithstanding – account for 68 million past-year users. The type of stimulants used, however, varies considerably across the different subregions.

5 *Terminology and Information on Drugs*.

6 Ibid.

TABLE 1 Main stimulants used in different regions or subregions

Region, subregion	Type of stimulants predominantly used, based on ranking of substances by countries in region, subregion	Other stimulants used
Africa	cocaine, methamphetamine	cocktails containing "crack" cocaine and cannabis; "ecstasy", khat
North America	cocaine, methamphetamine, non-medical use of prescription stimulants, "ecstasy", amphetamine	
Latin America and the Caribbean	cocaine, non-medical use of prescription stimulants	"crack" cocaine, cocaine base paste, amphetamine, methamphetamine, "ecstasy"
East and South-East Asia	methamphetamine (crystal and tablet form)	"ecstasy", stimulant NPS, cocaine
Central Asia and Transcaucasia	amphetamine, methamphetamine and "ecstasy"	
South-West Asia	methamphetamine	"ecstasy", cocaine
Near and Middle East	"captagon" (amphetamine)	methamphetamine, pharmaceutical stimulants, cocaine and "ecstasy"
Western and Central Europe	cocaine, amphetamine, "ecstasy"	methamphetamine, stimulant NPS
Eastern and South-Eastern Europe	cocaine	amphetamine, methamphetamine, "ecstasy"
Australia and New Zealand	methamphetamine (crystal and powder), "ecstasy", cocaine	non-medical use of prescription stimulants and stimulant NPS

Source: UNODC, responses to the annual report questionnaire.

The concurrent use of different stimulants and the concurrent or sequential use of stimulants with depressants are common polydrug use patterns observed in different regions.[7, 8, 9] Users who concurrently use other stimulants can be found across different typologies of drug users: from users of club drugs to people suffering from drug use disorders. Such users, owing to the tolerance (or cross-tolerance) developed to their main stimulants, may use a combination of stimulants, such as cocaine and MDMA. Alternatively, they may use stimulants with other drugs, such as cannabis and/or alcohol, to potentiate the effect of the stimulants and to increase the overall psychoactive experience.[10, 11, 12]

The simultaneous use of stimulants also figures prominently among groups of homosexual or

7 *World Drug Report 2016* (United Nations publication, Sales No. E.16.XI.7).

8 Keith A. Trujillo, Monique L. Smith and Melissa M. Guaderrama, "Powerful behavioral interactions between methamphetamine and morphine", *Pharmacology, Biochemistry, and Behavior*, vol. 99, No. 3 (September 2011), pp. 451–458.

9 Aukje K. Lamonica and Miriam Boeri, "An exploration of the relationship between the use of methamphetamine and prescription drugs", *Journal of Ethnographic and Qualitative Research*, vol 6, No. 3 (2012), pp. 160–176.

10 Andrew C. Parrot, E. Sisk and J. J. D. Turner, "Psychobiological problems in heavy ecstasy (MDMA) polydrug users", *Drug and Alcohol Dependence*, vol. 60, No. 1 (July 2000), pp. 105–110.

11 Christian Grov, Brian C. Kelly and Jeffrey T. Parsons, "Polydrug use among club-going young adults recruited through time-space sampling", *Substance Use and Misuse*, vol. 44, No. 6 (July 2009), pp. 848–864.

12 Miriam Boeri and others, "Poly-drug use among ecstasy users: separate, synergistic, and indiscriminate patterns", *Journal of Drug Issues,* vol. 38, No. 2 (April 2008), pp. 517–541.

bisexual men and men who have sex with men, who may use different stimulants in the context of "chemsex", where a stimulant such as methamphetamine or mephedrone may be used in combination with *gamma*-hydroxybutyric acid (GHB), "poppers" and medecines used for erectile dysfunction (e.g., sildenafil, tadalafil and vardenafil) in order to enhance the overall drug-taking and sexual experiences.[13]

The use of stimulants, including cocaine and methamphetamine, by regular users of opioids is also quite a common phenomenon and can take different forms. The literature has documented two main combinations: "speedball", in the case of the simultaneous use of cocaine and heroin; and "bombita",[14] in the case of heroin and methamphetamine.[15, 16] When stimulants and opioids are administered simultaneously, the user may experience mutually reinforcing effects of both the cocaine or methamphetamine and the opioids. When opioids and stimulants are used sequentially, the aim is either to use one substance to overcome the side effects, or to alleviate the adverse effects and severity of withdrawal symptoms, of the other. Cocaine use, for example, may help reduce some adverse effects of opioids while maintaining the "rush" induced by opioids. Cocaine and amphetamines may help manage opioid withdrawal symptoms. Similarly, using depressants such as opioids after cocaine induces a "depressant" effect or helps to reach a "relaxed high", which mitigates the overexcitement caused by the use of stimulants.[17, 18] Opioid users who are in long-term opioid agonist therapy may also use stimulants to self-medicate for depression or other untoward effects of opioid agonist therapy.[19, 20]

13 Raffaele Giorgetti and others, "When "Chems" Meet Sex: a rising phenomenon called "ChemSex"", *Current Neuropharmacology*, vol. 15, No. 5 (July 2017), pp. 762–770.

14 Everett H. Ellinwood Jr., Robert D. Eibergen and M. Marlyne Kilbey, "Stimulants: interaction with clinically relevant drugs", *Annals of New York Academy of Sciences,* vol. 281, No. 1 (December 1976), pp. 393–408.

15 Francesco Leri, Julie Bruneau and Jane Stewart, "Understanding polydrug use: review of heroin and cocaine co-use", *Addiction*, vol. 98, No. 1 (January 2003), pp. 7–22.

16 Trujillo, Smith and Guaderrama, "Powerful behavioural interactions".

17 Barry K. Logan, "Methamphetamine: effects on human performance and behavior", *Forensic Science Review*, vol. 14, Nos. 1–2 (January 2002), pp. 133–151.

18 Matthews S. Ellis, Zachary A. Kasper and Theodore J. Cicero, "Twin epidemics: the surging rise of methamphetamine use in chronic opioid users", *Drugs and Alcohol Dependence*, vol. 193 (December 2018), pp. 14–20.

19 Schwann Shariatirad, Masoomeh Maarefvand and Hamed Ekhtiari, "Methamphetamine use and methadone maintenance treatment: an emerging problem in the drug addiction treatment network in Iran", *International Journal of Drug Policy*, vol. 24, No. 6 (November 2013), pp. e115–e116.

20 Darshan Singh and others, "Substance abuse and the HIV situation in Malaysia", *Journal of Food and Drug Analysis*, vol. 21, No. 4 (December 2013), pp. S46–S51.

Note: Data refer to 2017.

Supply of cocaine

Coca bush cultivation and cocaine manufacture reached an all-time high in 2017

Primarily as a result of a sharp decline in Colombia, coca bush cultivation decreased from its peak in 2000 by 45 per cent over the period 2000–2013. This was followed by a twofold increase in the area under coca cultivation at the global level over the period 2013–2017. The increase in 2017 (15 per cent) was less marked than in the previous year but resulted in a record high of 245,400 ha under coca bush cultivation worldwide.

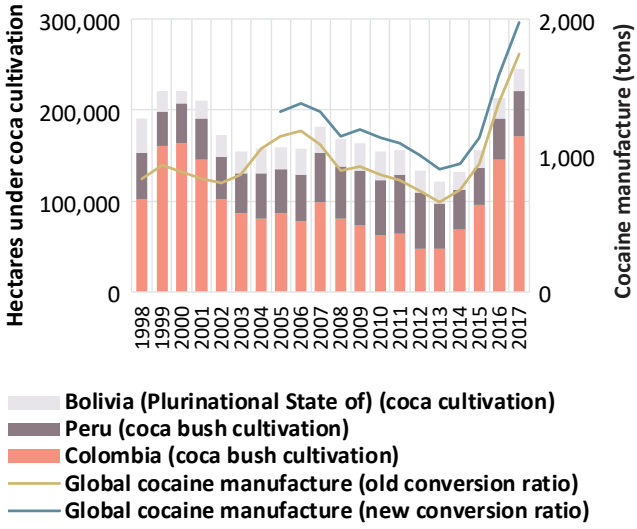
Estimated global manufacture of cocaine also reached an all-time high of 1,976 tons in 2017, which was more than double the level recorded in 2013 and represented an increase of 25 per cent over the level in 2016.

Increase in global coca bush cultivation mainly driven by changes in coca cultivation in Colombia

Trends in the global area under coca bush cultivation over the past two decades have been largely driven by developments in Colombia. Coca bush cultivation in Colombia fell by 70 per cent over the period 2000–2013 but more than tripled between 2013 and 2017. In parallel, the proportion of the global area under coca bush cultivation accounted for by Colombia decreased from 74 per cent of the total in 2000 to 40 per cent in 2013, before increasing again to 70 per cent of the global total in 2017.

Coca bush cultivation has been identified in 22 of the 32 departments in Colombia. In 2017, most coca bush cultivation continued to take place in the

FIG. 2 Global coca bush cultivation and cocaine manufacture, 1998–2017



Sources: UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years.

Recent increase in coca bush cultivation in Colombia

Trends: increase in, and concentration of, coca bush cultivation and integration of illicit coca/cocaine supply chain

Coca bush cultivation increased in Colombia from 46,000 ha to 171,000 ha over the period 2013–2017. This change was not homogenous across the country: in some areas, coca bush cultivation increased sharply while in others it not only decreased but may be disappearing altogether. Coca bush cultivation has become more concentrated as it has intensified in some of the areas where it has been present over the past decade. Roughly 80 per cent of coca bush cultivation detected in 2017 took place in the areas continuously affected by coca cultivation in the last decade.[a] However, in 37 per cent of the areas where there had been coca bush cultivation at any time in the past decade there was no coca bush cultivation in the last three years.

The increase in, and the concentration of, coca bush cultivation has largely taken place in border areas (land or maritime boarders) where there are now areas with intense coca bush cultivation and a cocaine manufacturing infrastructure. These areas are instrumental in cocaine trafficking as they integrate the different phases of the coca/cocaine supply chain: coca bush cultivation; transformation/manufacturing of coca into cocaine; and cocaine trafficking. Within this complex network, coca growers play only a minor role in the cocaine supply chain in Colombia.

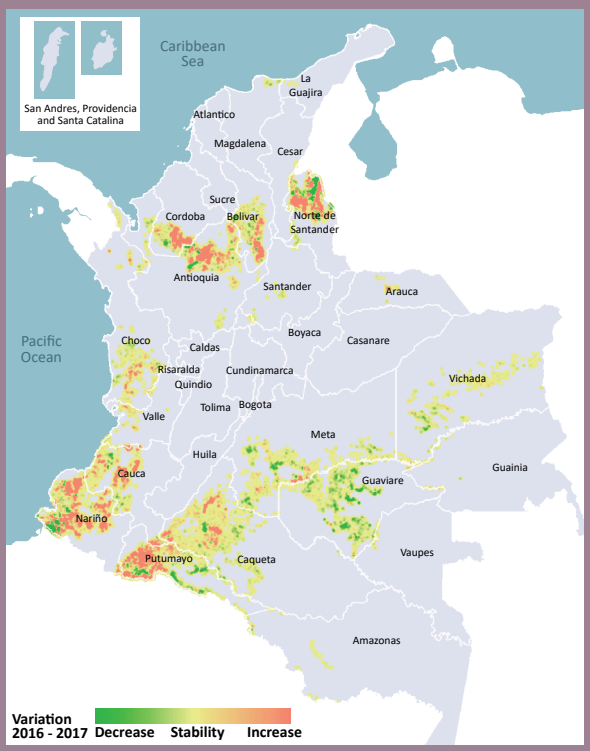
Main causes: vulnerabilities, changes in trafficking control structures, incentives

A number of factors may have driven the expansion of coca bush cultivation in some areas and its reduction in others. The areas that remain heavily affected by coca bush cultivation are, on average, at least 250 km from the main cities and are located near rural towns that have a limited infrastructure. These conditions hinder the competitivity of licit agriculture and make the economic integration of such communities extremely difficult.

Decreases in coca bush cultivation have occurred primarily in areas where the geographical and sociopolitical nature of the territory facilitates state investment in socioeconomic interventions. For example, a measurable reduction in coca bush cultivation has been observed in the eastern part of Colombia where, following the peace agreement and subsequent government programme, farmers in areas where FARC was previously predominant have abandoned coca bush cultivation.

Yet not all of those areas have experienced a reduction in coca bush cultivation. The concentration of coca bush cultivation in some areas may have been driven by the strategic positioning of both old and new organized groups. As a result of the peace process with FARC and the activities of the Colombian authorities in tackling drug trafficking, the groups that were previously predominant in large areas of the territory (for example, FARC, AUC, BACRIM) have been partially replaced by groups that are more geographically concentrated and are more motivated by profit generated from the cultivation of illicit crops than by political agendas. The geographical concentration of coca bush cultivation increases its profitability for such

Trends in coca bush cultivation, Colombia, 2016–2017



Source: Government of Colombia - UNODC supported monitoring system.

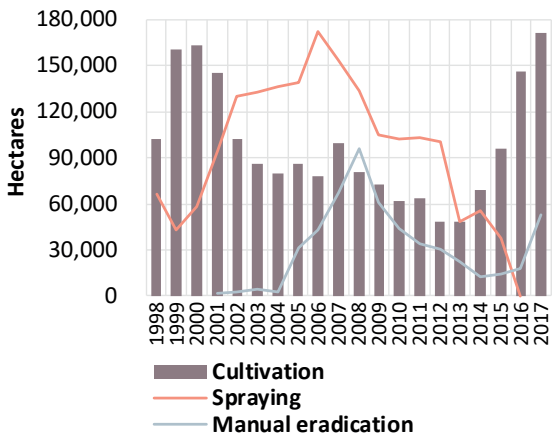
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

organized groups as they can provide incentives to coca growers through competitive farmgate prices and violent coercion and can corrupt local authorities.

The overall increase in coca bush cultivation in Colombia since 2013 may also have been driven in part by the perception that the cultivation of coca bush was less risky than in previous years because of the decline in eradication activities. Together with higher prices and greater profits, this may have constituted a factor in favour of coca bush cultivation, although this does not ultimately translate into a substantial improvement in the quality of life of coca growers.

[a] 24 per cent of the areas affected by coca bush cultivation in the past 10 years have been continuously affected during this period.

FIG. 3 Area under coca bush cultivation, sprayed and manually eradicated in Colombia, 1998–2017



Sources: UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years.

south of the country, notably in Nariño (27 per cent of the total) and Putumayo (17 per cent), and to a lesser extent in the north, notably in Norte de Santander (16 per cent).[21]

After 2012, areas under coca cultivation that were fumigated and/or manually eradicated declined from some 130,000 hectares to 18,300 hectares in 2016 before rising again to 53,600 ha in 2017. This decline in eradication, however, went hand in hand with an intensification of law enforcement efforts against the manufacturing of cocaine in Colombia.

In Colombia, the overall number of laboratories used for the manufacture of coca paste, cocaine base and cocaine HCl that were dismantled more than doubled, from 2,334 in 2013 to 4,820 in 2016 – the highest number ever reported – before decreasing slightly to 4,252 in 2017. Moreover, the quantity of cocaine HCl seized more than doubled, from 167 tons in 2013 to 362 tons in 2016 and increased further to 435 tons in 2017. All of these increases reflect government efforts to disrupt the cocaine market and the increase in the supply of cocaine-related products. Nonetheless, the clandestine manufacture of cocaine in Colombia is estimated to have increased almost fivefold, from 290 tons in 2013 to 1,379 tons in 2017, although the annual growth rate of the area under coca bush cultivation has started to decelerate, dropping from 52 per cent in 2016 to 17 per cent in 2017.[22]

More marked than the 17 per cent increase in the area under coca bush cultivation was the increase in the estimated quantity of cocaine manufactured in Colombia in 2017, which rose 31 per cent to 1,379 tons. The increase in manufacture was primarily the result of a sharp increase in the size of the "productive area" of coca bush cultivation in that country. This was due to the expansion of coca bush cultivation to new areas in 2016, which only produced sufficient coca leaf for harvest and the manufacture of cocaine in 2017.[23]

21 UNODC and Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2017*.

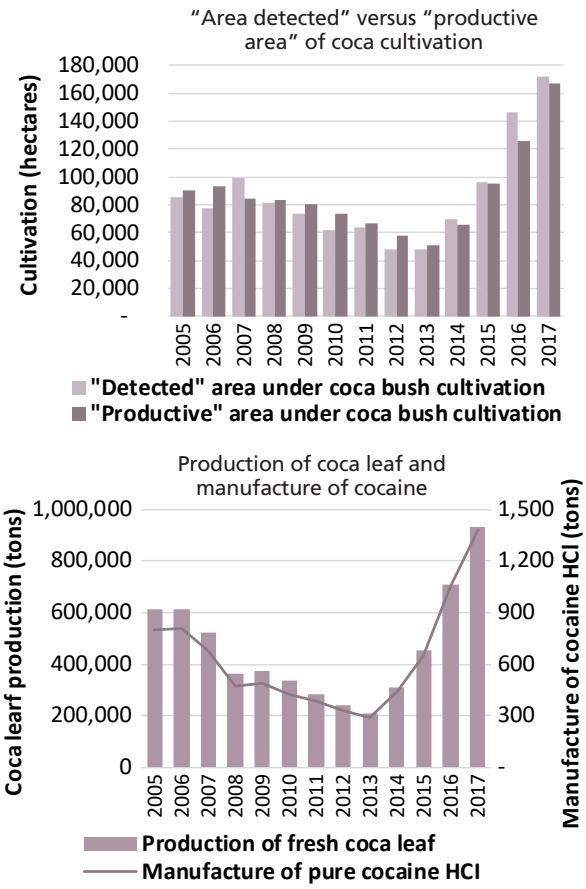
22 UNODC and Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2017* and previous years.

23 UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years.

Alternative development in Colombia

The National Comprehensive Programme for the Voluntary Substitution of Illicit Crops of Colombia (PNIS) increased its assistance to families, which rose from approximately 54,000 families in 2017 to more than 99,000 families in 14 departments in 2018. After registering with the programme, beneficiaries receive 1 million Colombian pesos per month (roughly $325) for a period of 12 months. Once a family has received the first payment, it has 30 to 60 days for the "voluntary eradication" of its coca cultivation. UNODC verified the "voluntary eradication" of more than 29,000 ha over the period August 2017–December 2018 (including 3,000 ha in 2017 and 26,000 ha in 2018) out of the approximately 52,000 ha under coca cultivation in the municipalities that have so far benefited from the programme. There was a "voluntary eradication" compliance rate of 94 per cent. In addition, national authorities reported manual "assisted eradication" by the police and army in PNIS areas of more than 5,000 ha up to 31 January 2019. After the verification of "voluntary eradication", PNIS provides technical assistance, most notably for projects that support the improvement of food security (at a cost of roughly $600 per beneficiary family), quick-income projects ($3,000 per beneficiary family) and some long-term productive projects ($3,300 per beneficiary family). In order to limit the otherwise perverse incentive of farmers growing coca bush purely to obtain alternative development assistance, both coca farmers (69 per cent of all beneficiaries) and non-coca farmers in areas heavily affected by narcotrafficking were entitled to register for PNIS and received the same benefits. PNIS also established complementary assistance for coca leaf labourers (non-land owners), who receive 1 million Colombian pesos per month for a period of 12 months as payment for community service activities.

FIG. 4 Coca bush cultivation and manufacture of cocaine in Colombia, 2005–2017



Source: UNODC and Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2017* (September 2018).

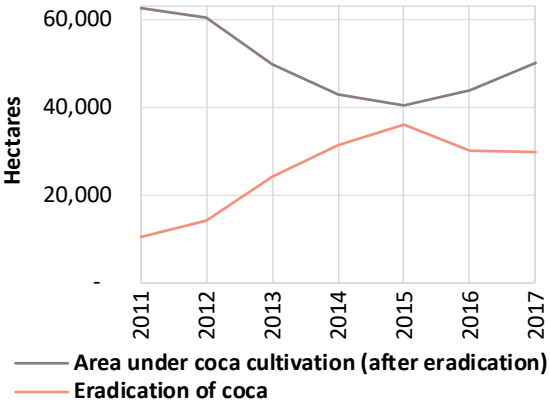
Increase in coca bush cultivation in Peru

Equivalent to 20 per cent of global coca bush cultivation, the overall area under coca bush cultivation in Peru in 2017 increased by 14 per cent from the previous year to 49,900 ha; this is roughly equivalent with the level reported in 1998 (51,000 ha), although still substantially lower than the peak in 1990 (121,300 ha).[24]

Coca bush cultivation in Peru declined in the 1990s by 64 per cent, in tandem with severe State action against the *Sendero Luminoso* ("Shining path"), an

24 UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2017* (December 2018) and previous years.

FIG. 5 Area under coca bush cultivation and eradication in Peru, 2011–2017



Source: UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2017* (December 2018).

MAP 1 Area under coca bush cultivation, by production zone, Peru, 2016–2017

Source: UNODC and DEVIDA, *Perú Monitoreo de Cultivos de Coca 2017*, December 2018.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

insurgent group whose activities were partly financed by coca production, and the introduction of a "shoot-down policy" in the mid-1990s – "air bridge denial", to prevent unauthorized planes from transporting coca paste from Peru to Colombia. This was followed by a decrease in coca leaf prices in Peru and thus fewer incentives for farmers to cultivate coca bush; however, cultivation increased over the period 2000–2011 by 45 per cent, as the policy ended and coca leaf prices rebounded. Coca bush cultivation in Peru declined again over the period 2011–2015, by 35 per cent, partly as a result of successful alternative development interventions in combination with increasing coca bush eradication.[25] Since 2015, however, coca bush cultivation has been increasing in Peru, while eradication has been decreasing.[26]

The area under coca bush cultivation in Peru increased in 2017. Coca leaf production rose by 11 per cent in that country from the previous year. Despite the increases in supply, coca leaf prices in Peru also increased slightly (from $3.10 to $3.40 per kg), suggesting sustained demand for cocaine worldwide.[27]

Coca cultivation was found in 13 of the 24 departments in Peru in 2017, with Cusco – encompassing the area of La Convención y Lares and parts of the Valle de lo Ríos Apurimac, Ene y Mantaro – continuing to be the department most affected.[28] Indeed, most coca leaf production in Peru continues to take place in the Valle de lo Ríos Apurimac, Ene y Mantaro (67 per cent of total in 2017), and in La Convención y Lares (13 per cent).

25 UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2015* (July 2016).

26 UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2017.*

27 Ibid.

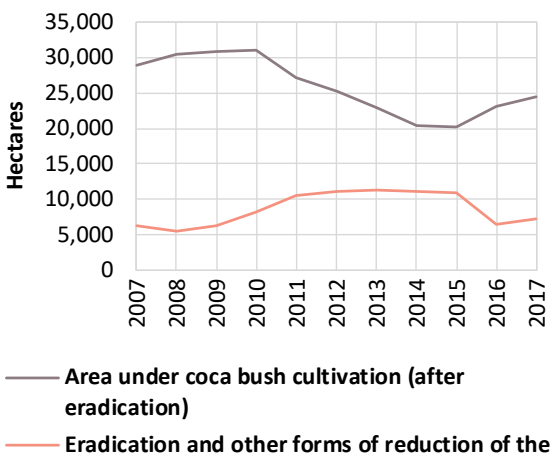
28 Ibid.

Slight increase in coca bush cultivation in the Plurinational State of Bolivia

The area under coca bush cultivation in the Plurinational State of Bolivia increased by 6 per cent in 2017, to 24,500; this was similar to the level estimated in 2012, although still only half the size of the peak in 1990 (50,300 ha). The Plurinational State of Bolivia accounted for 10 per cent of global coca cultivation in 2017. Most coca bush in the country continues to be cultivated in the traditional coca-producing area, Yungas de la Paz (65 per cent in 2017), and to a lesser extent in Tropicó de Cochabamba (35 per cent), mostly in the province of Chapare.

The increase in coca bush cultivation in the Plurinational State of Bolivia in 2017 ended the previous downward trend over the period 2010–2015, during which cultivation decreased by 35 per cent.[29] According to the Government, that decrease happened at the same time as the policy of "rationalization of coca production" through social control mechanisms was introduced[30] – that is, a policy based on a voluntary reduction in coca bush cultivation to a maximum of 1 cato per family[31, 32] – as well as a policy of eradication of cultivation beyond the accepted limit and in national parks.

FIG. 6 Area under coca bush cultivation and eradication in the Plurinational State of Bolivia

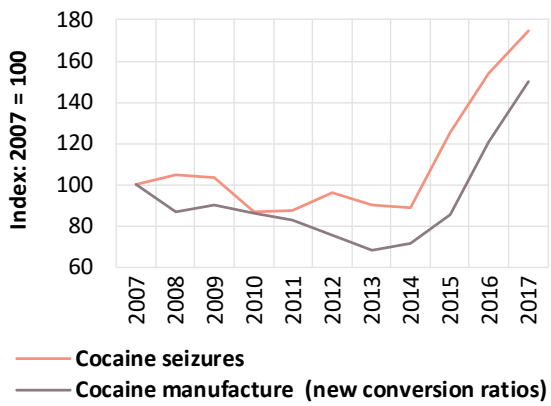


Source: UNODC and Plurinational State of Bolivia, *Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2017* (August 2018).

Cocaine available for consumption has increased less than the manufacture of cocaine, as seizures reach record highs

Global seizures of cocaine rose to 1,275 tons (prior to purity adjustments) in 2017, the largest quantity ever reported. The increase in the quantity of cocaine seized over the past decade (74 per cent) reflects the increase in cocaine manufacture (50 per cent) and a subsequent increase in cocaine trafficking. The amount of cocaine available for consumption (manufacture less seizures) has therefore increased less

FIG. 7 Global cocaine manufacture and global quantities of cocaine seized, 2007–2017



Sources: UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years and UNODC, annual report questionnaire data.

29 UNODC and Plurinational State of Bolivia, *Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2015* (July 2016).

30 Plurinational State of Bolivia, National Council against Drug Trafficking (CONALTID), *Estrategia de Lucha contra el Narcotráfico y Revalorización de la Hoja de Coca 2007-2010* (La Paz, 2007), quoted in European Commission, *Bolivia: Country Strategy Paper 2007-2013* (Brussels, 2007), pp. 37–38.

31 Robert Lessmann, "Bolivien: Zwischen Modellfall und Unregierbarkeit", in *Bolivien Staatszerfall als Kollateralschaden*, Thomas Jäger, ed. (Wiesbaden, Germany, VS Verlag für Sozialwissenschaften, 2009), p. 54.

32 According to this policy, rights to grow coca are given to communities or local coca growers' associations; if an area of more than one cato of coca is found per individual farmer, the rights are taken away for the whole community or association (Jaqueline Garcia-Yi, "Social control as supply-side harm reduction strategy", Iboeroamerican Journal of Development Studies, vol. 3, No. 1 (2014), pp. 58–82)).

than the manufacture of cocaine, which is explained by the fact that the increase in the quantity of cocaine seized has exceeded growth in the manufacture of cocaine. This suggests that, at the global level, law enforcement efforts and international cooperation have become more efficient and have intercepted a larger share of cocaine products than in the past, although changes in purity could also partially account for the different trends.

Cocaine seizures remain concentrated in the Americas and in Europe

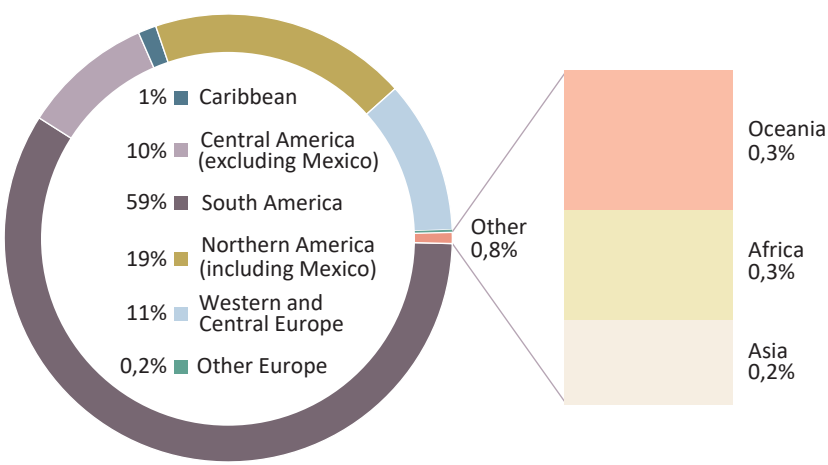
In terms of quantity, the bulk of cocaine continues to be seized in the Americas, which accounted for almost 90 per cent of the global total in 2017. The largest portion was seized in South America, with the largest quantities seized in Colombia (38 per cent of the global total), Ecuador (7 per cent), Brazil (4 per cent) and Venezuela (Bolivarian Republic of) (3 per cent) in 2017. The global quantity of cocaine seized in 2017 increased by 13 per cent from the previous year. Increases of about 20 per cent from 2016 levels were recorded in Colombia in 2017 in seizures of both cocaine HCl and of cocaine paste and base, to 434 tons and 55 tons (including over 2 tons seized as "*basuco*"), respectively, the largest quantities of such substances seized worldwide.

In one of the most significant developments in cocaine trafficking in 2017, authorities in Colombia also reported that in addition to the trafficking of cocaine manufactured in Colombia, there was a sharp increase in the trafficking of coca paste and base by boat to neighbouring countries for transformation into cocaine HCl. A number of countries in Latin America reported the dismantling of cocaine base and cocaine HCl laboratories over the period 2013–2017. In descending order of quantity, those countries were Colombia, followed by the Plurinational State of Bolivia, Peru, Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile and Ecuador (with an equal number dismantled), Paraguay, Honduras and El Salvador. Moreover, small numbers of cocaine laboratories dismantled over that period were reported by countries in North America (Canada and the United States of America) and Europe (Albania, Belgium Greece, Slovenia, Portugal and Spain).

In North America, the United States continued to account for the largest quantity of cocaine seized (18 per cent of the global total); in Central America, the largest quantities were reported by Panama (5 per cent) and Costa Rica (2 per cent). Seizures reported by countries in the Caribbean, by contrast, accounted for just 1 per cent of the total global quantity of cocaine intercepted, mostly reflecting seizures made by the Dominican Republic.

The largest quantity of cocaine seized outside the Americas in 2017 was again reported in Europe (11

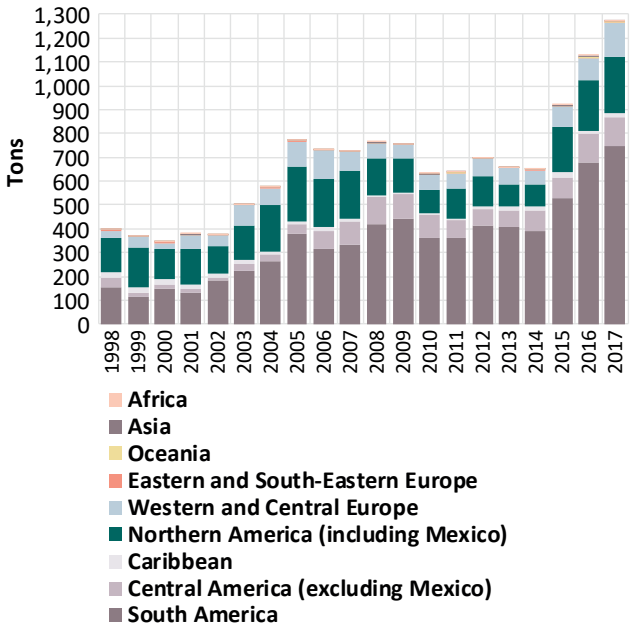
FIG. 8 Global quantity of cocaine seized, breakdown by region, 2017



Source: UNODC, based on responses to the annual report questionnaire.

Note: total amount seized was 1,275 tons, including cocaine HCl, coca paste and base, crack-cocaine.

FIG. 9 Global quantity of cocaine seized, by region,1998–2017



Source: UNODC, based on responses to the annual report questionnaire.

Note: includes seizures of cocaine HCl, coca paste and base, "crack" cocaine.

per cent of the global total), mostly in Western and Central Europe, in particular in Belgium (3.5 per cent of the global total), Spain (3.2 per cent), France (1.4 per cent) and the Netherlands (1.1 per cent). The quantity of cocaine seized in the rest of the world in 2017 remained comparatively limited: Oceania (4.3 tons), mainly reported in Australia; Africa (3.4 tons), notably in Morocco, South Africa and Nigeria; and Asia (2.8 tons), most notably in Saudi Arabia, followed by Pakistan.

The global quantity of cocaine seized in 2017 increased by 13 per cent from the previous year, reflecting an increase in all regions except Asia. The sharpest increases were reported in Oceania (94 per cent) and Europe (53 per cent), where the increases in the quantities of cocaine seized in recent years reflect the increase in the availability of cocaine and an expansion of the cocaine market, as suggested by increases in the use and purity of cocaine, as well as in cocaine metabolites found in wastewater. Similar trends have been seen in North America. The quantities of cocaine seized in Asia, despite decreasing by more than 50 per cent in 2017, were still at the second-highest level ever reported.

Given the existing cocaine trafficking routes, most cocaine interceptions take place at sea or near to it. Over half of significant seizures of cocaine (55 per cent) over the period 2013–2017 (cocaine HCl and cocaine base) were related to trafficking at sea, while around a quarter were related to trafficking by land and another 15 per cent were intercepted at airports.[33, 34]

Seizures reflect the fact that cocaine continues to be trafficked primarily from South America to North America and Western and Central Europe

A total of 143 countries across all regions reported cocaine seizures over the period 2013–2017, up from 99 countries over the period 1983–1987, suggesting that cocaine trafficking has expanded into a global phenomenon. Seizure data suggest that most of the cocaine trafficked from the Andean countries is destined for the main consumer markets in North America and Western and Central Europe. Based on the quantities of cocaine seized over the period 2013–2017, the quantity of cocaine trafficked to North America would be nearly double that trafficked to Western and Central Europe. Trafficking to other regions, although still limited, also seems to be on the increase, thus contributing to the proliferation of cocaine trafficking routes across the globe.

Cocaine trafficking to North America

In the Americas, the primary cocaine trafficking flow is from Colombia to the United States. Overall cocaine seizures in North America have more than doubled in the period 2013–2017, from 94 tons to 238 tons. The main destination country in the subregion for cocaine shipments continues to be the United States, which accounted for 94 per cent of all the cocaine seized in North America over the period 2013–2017, as well as in 2017 itself.

According to the authorities of the United States, cocaine is often shipped to the United States via

33 Individual drug seizures are based on information provided by 85 countries over the period 2013–2017, including 56 countries that provided information on cocaine seizures.

34 UNODC, individual drug seizure database.

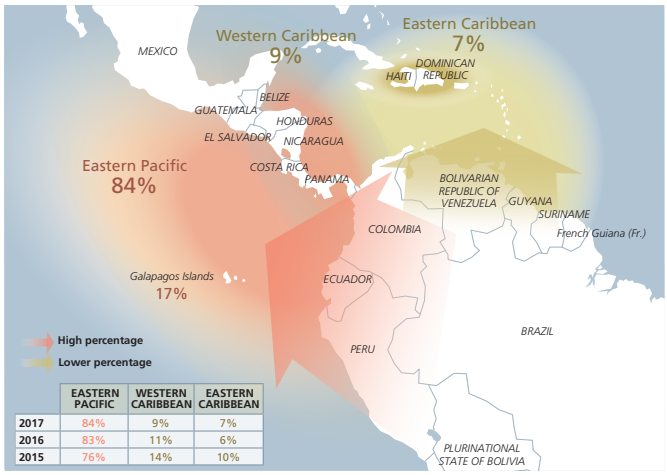
Mexico, having previously departed and/or transited other countries, mainly Colombia, Ecuador and Guatemala.[35] Similarly, the authorities of Mexico have reported that Colombia and Ecuador, followed by Peru, are the main cocaine departure countries in South America, and Guatemala is the main transit country in Central America. In the past, most cocaine was smuggled into Mexico by sea; however, the authorities of Mexico reported that most of the cocaine (52 per cent) seized in that country in 2017 was smuggled by land via Guatemala, while 45 per cent was shipped to Mexico by sea; a further 3 per cent was trafficked by air into the country. Most of the cocaine arriving in Mexico continues to be for onward trafficking to the United States and/or for domestic use, although 2017 data suggest that smaller amounts (4 per cent of the total seized in 2017) are also destined for China.

The vast majority (93 per cent) of the cocaine analysed in the United States in 2017 originated in Colombia, while 4 per cent originated in Peru; the origin of the remainder (3 per cent) could not be identified.[36] In terms of trafficking routes, it is estimated that the Pacific Ocean continues to be used to smuggle cocaine into the United States far more than the Atlantic Ocean.[37]

The predominance of cocaine trafficking to the United States via the Pacific seems to be linked to the concentration of coca leaf production and cocaine manufacture in southern Colombia (Narino, Putumayo, Cauca and Caquetá), where the Pacific ports of Colombia and neighbouring Ecuador provide the closest access to the sea. The cocaine is typically trafficked from Colombia to Central America or Mexico by ship or semi-submersible.[38]

It is difficult to estimate how much cocaine is smuggled into the United States by land and how much by sea, but the Pacific and Atlantic routes remain

MAP 2 Cocaine flow from South America to the United States, 2017

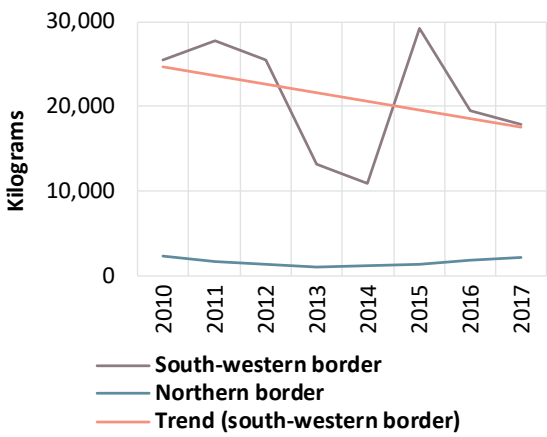


	EASTERN PACIFIC	WESTERN CARIBBEAN	EASTERN CARIBBEAN
2017	84%	9%	7%
2016	83%	11%	6%
2015	76%	14%	10%

Source: United States Government database of Drugs Seizures and Movement.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

FIG. 10 Quantity of cocaine seized on the south-western and northern borders of the United States, 2010–2013



Source: National Seizures System as of 11 March 2019.

the two main trafficking routes, while trafficking by air and mail is comparatively limited. Seizures of cocaine entering the United States by land are made mostly on the south-western border with Mexico, with the quantities intercepted declining in recent years.[39] By contrast, seizures of cocaine in the transit

35 United States, Immigration and Customs Enforcement, Homeland Security Investigations, "Executive information statistical report", quoted in UNODC, responses to the annual report questionnaire.

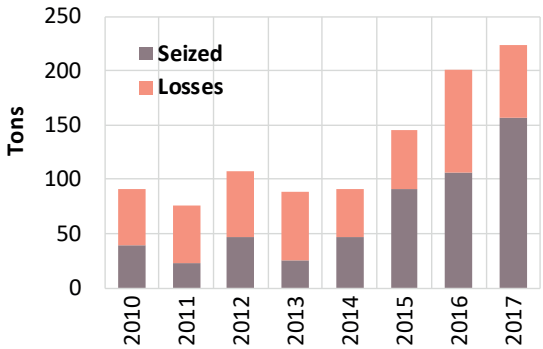
36 United States Department of Justice, DEA, *2018 National Drug Threat Assessment* (October 2018), p. 41.

37 United States Department of Justice, DEA, *2018 National Drug Threat Assessment* (October 2018), p. 51.

38 Jarrod Sadulski, "The business of cocaine and how semi-submersible vessels threat the detection of drug smugglers", Homeland Security, 27 July 2018.

39 Data reported to the National Seizure System, quoted in UNODC, responses to the annual report questionnaire.

FIG. 11 Quantities seized and losses of cocaine in sea transit zones in the Caribbean and eastern Pacific, United States, 2010–2017



Source: United States, Department of Homeland Security reports from the Office of Inspector General 2017 and previous years.

Note: "Losses" typically refer to the estimated amounts of cocaine thrown by drug traffickers into the sea before ships are searched by the authorities; this is usually an attempt to reduce subsequent drug trafficking charges.

zones of the Caribbean and eastern Pacific heading towards the United States market have shown a clear upward trend, especially since 2014.

Elsewhere in North America, the vast majority of the cocaine seized in Canada also originates in Colombia – roughly 90 per cent of all cocaine smuggled into Canada over the period 2013–2017 – and reaches the country through the Caribbean (mainly via Jamaica, the Dominican Republic and Trinidad and Tobago) and, to a lesser extent, the United States. The quantity of cocaine seized along the northern border of the United States increased in recent years, suggesting ongoing trafficking activities via the United States to Canada.

Cocaine trafficking to Western and Central Europe

The second most important cocaine trafficking flow worldwide is from the Andean countries to Western and Central Europe, the second largest market for cocaine worldwide after the United States. The quantity of cocaine seized in West and Central Europe more than doubled, from 65 tons in 2013 to 141 tons in 2017, accounting for 98 per cent of the cocaine intercepted in Europe in 2017, as well as over the period 2013–2017. According to seizure data reported by Member States, Spain remains the main transit country reported by other countries in Europe for cocaine trafficked from South America, together with the Netherlands, followed by Germany, Belgium and Italy.

Cocaine smuggled to Western and Central Europe originates mainly in Colombia, which accounted for around 60 per cent of mentions as the country of origin by countries in the subregion in 2017 and over the period 2013–2017. The analysis of individual drug seizures reported by 27 countries in Europe suggests that up to 74 per cent of all cocaine intercepted over the period 2013–2017 may have originated in Colombia, 21 per cent in Peru and 4 per cent in the Plurinational State of Bolivia.[40] Shipments are smuggled in a variety of ways: directly from those countries or via neighbouring countries, including via Ecuador and the Bolivarian Republic of Venezuela in the case of cocaine manufactured in Colombia; via Brazil, in the case of cocaine manufactured mainly in Bolivia (Plurinational State of) and Peru; or via Africa, mostly West and Central Africa.

The distribution of cocaine seizures made in Europe by type of trafficking route (sea, land or air) suggests that the largest quantity of cocaine reaches Europe by sea, through ports in Spain, Belgium, the Netherlands, Italy and France, from where cocaine shipments are trafficked to other countries in Europe by land. Reports by many other countries in Europe, which have much smaller cocaine markets and seize far smaller quantities of cocaine, suggest that most cocaine was smuggled via a neighbouring country by road or by air.

Cocaine trafficking to Africa

Based on quantities of cocaine seized, trafficking to countries outside the Americas and Western and Central Europe remains comparatively limited (1 per cent of the global quantity seized), although it has been growing and cocaine trafficking routes have been proliferating in recent years. The limited capacity of countries in Africa to carry out and report seizures may result in an underestimation of the extent of cocaine trafficking in Africa. Indeed, in descending order of quantity, recent large seizures in Morocco, South Africa and Guinea-Bissau

40 UNODC, individual drug seizures database.

Significant cocaine seizures reported in Africa

Morocco reported cocaine seizures of 120 kg in 2015, 1.6 tons in 2016 and of 2.8 tons in 2017, including a single shipment of 2.6 tons of cocaine from Brazil seized in October 2017. In another major seizure the following year, 1 ton of cocaine paste was seized in El Jadida, Morocco, in December 2018, from a network smuggling cocaine from Latin America to Europe.[a]

South Africa reported cocaine seizures of 191 kg in 2016 and of 210 kg in 2017, involving 4,639 reported seizure cases that year. In January 2019, however, a single seizure of 706 kg was reported on a vessel at Coega Harbour, near Port Elizabeth, which was on its way to Singapore and India, the expected final destination of the shipment.[b] Guinea-Bissau, which has not reported any cocaine seizures to UNODC in recent years, seized 789 kg of cocaine in March 2019, its single largest ever cocaine seizure. The cocaine was found in the false bottom of a truck loaded with frozen fish,[c] a well-known practice used by criminals to discourage the authorities from in-depth searches, since if no drugs are found, compensation may be demanded.

a UNODC, Drugs Monitoring Platform.

b Ibid.

c UNODC, Regional Office for West and Central Africa, "Bissau-Guinean authorities achieve largest ever drug seizure in the history of Guinea Bissau", 9 March 2019.

indicate that the trafficking of cocaine via Africa continues to be well organized.

Often intended for onward trafficking to Europe and, to a lesser extent, Asia, cocaine shipments to Africa are mainly directed to countries in West and Southern Africa. Total quantities of cocaine seized in Africa have fluctuated in recent years: they were at similar levels in 2013 and 2017, but nearly tripled from the low of 1.2 tons in 2015 to 3.4 tons in 2017.

The trafficking of cocaine to Africa takes place mostly by air and by sea, with reports often shifting from one year to the next. In 2017, Angola, the Central African Republic, Ghana, Kenya, Madagascar, Nigeria and the Sudan reported that most cocaine shipments were trafficked by air, while Morocco, which accounted for 86 per cent of all the cocaine seized in Africa in 2017, reported that 90 per cent of it had been shipped to the country by sea.

According to information provided by Member States, over the period 2013–2017, most of the cocaine trafficked to Africa seems to have departed from Brazil, followed by Colombia, the Plurinational State of Bolivia and Peru; transit to Africa via the United Arab Emirates also seems to occur. In Africa itself over the same period, the transit of cocaine is reported by countries to take place mostly via Nigeria, followed by South Africa and the United Republic of Tanzania and by Ghana.

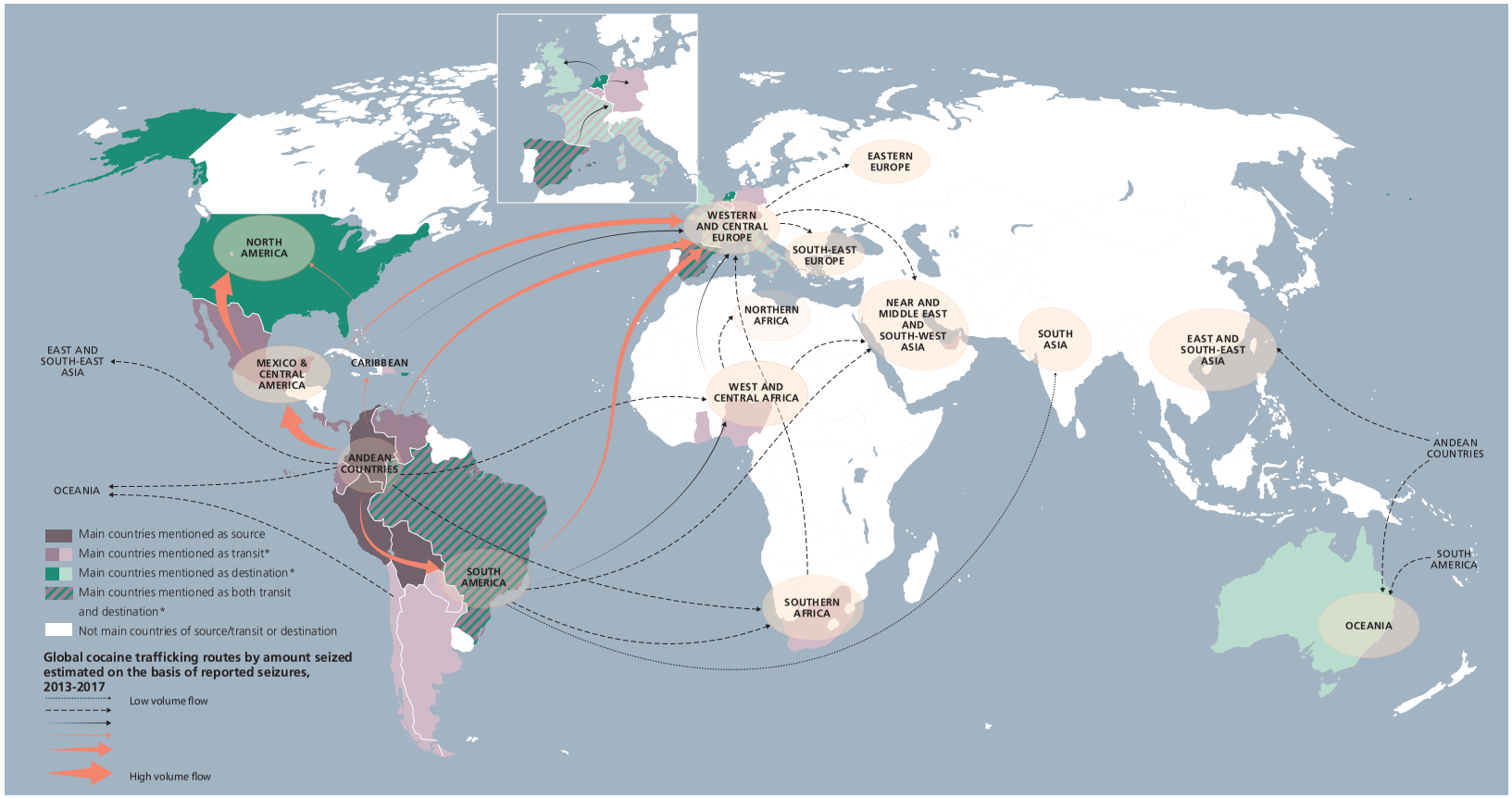
While most of the reported destination countries outside Africa for cocaine trafficked within the region over the period 2013–2017 are located in Europe (notably France, Spain, Italy and, to a lesser extent, the Netherlands and the United Kingdom of Great Britain and Northern Ireland), countries in Africa also mentioned the United States and, to a lesser extent, China, Israel and Malaysia as destination countries.

Cocaine trafficking to Asia

Quantities of cocaine seized in Asia have also been fluctuating, reaching 2.8 tons in 2017 after a peak of 6.4 tons in 2016. Over the period 2013–2017, the largest quantities of cocaine seized in Asia were reported by East and South-East Asia (46 per cent) and the Near and Middle East and South-West Asia (38 per cent).

The trafficking of cocaine to Asia seems to take place mainly by air, the exception in recent years being

MAP 3 Main cocaine trafficking routes as described by reported seizures, 2013–2017



Sources: UNODC.

** A darker shade indicates a larger amount of cocaine being seized with the country as transit/destination.*

The size of the route is based on the total amount seized on that route, according to the information on trafficking routes provided by Member States in the annual report questionnaire, individual drug seizures and other official documents, over the period 2013–2017. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered as broadly indicative of existing trafficking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking: origins of the arrows indicate either the area of departure or the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin does not reflect the country in which the substance was produced.

The main countries mentioned as transit or destination were identified on the basis of both the number of times they were identified by other Member States as departure/transit or destination of seizures, and the annual average amount that these seizures represent during the period 2013–2017. For more details on the criteria used, please see the Methodology section of this document.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

China, a country to which most cocaine is trafficked by sea. The most frequently mentioned departure countries for cocaine smuggled to China over the period 2013–2017 were Brazil and Colombia. In addition, one major seizure of 928 kg made in Sri Lanka in December 2016 involved a maritime shipment of cocaine from Ecuador that was destined for India. Another exception is Japan, where most cocaine was reported to have entered the country by mail, followed by shipments by air. The most frequently mentioned departure countries for cocaine smuggled to Japan were countries in North America (United States and Canada) and Europe (the Netherlands), although some cocaine was also shipped directly from Peru.

Brazil is overall the single most mentioned transit country by Member States for cocaine shipments destined to Asia (all subregions) over the 2013–2017 period. Direct shipments from cocaine manufacturing areas in South America have also been reported by Asian countries, as has transit through a number of other countries in the Americas, including Mexico, the United States and Panama, as well as a number of countries in Africa, notably Nigeria, South Africa and Egypt .

According to Member States, cocaine shipments within Asia seem to transit the United Arab Emirates, mostly via Dubai, a major air traffic hub for other countries in Asia and, to a lesser extent, Thailand. The most frequently mentioned final destination countries for cocaine smuggled to Asia over the period 2013–2017 were China (including Hong Kong, China), followed by Israel.

In 2018, a number of significant cocaine seizures took place in Asia, including 1.3 tons in China in April, after a major cross-border drug trafficking gang was busted in Shenzhen (the border city with Hong Kong, China).[41]

Cocaine trafficking to Oceania

Based on information provided by Australia and New Zealand on countries of origin, departure and transit for cocaine by countries in Oceania over the period 2013–2017, cocaine seems to arrive in the region mainly, in descending order of quantity, via the United States and Chile. Direct shipments from Peru also occur and transit via a number of other countries in the Americas (notably Brazil, Argentina and Canada) and Europe (notably the United Kingdom and the Netherlands).

Cocaine smuggled to Oceania seems to be predominantly destined for Australia, especially Sydney,[42] and to a lesser extent, New Zealand. No other country in the region reported cocaine seizures to UNODC in the past decade. The cocaine seized in Australia accounted for 98 per cent of all the cocaine seized over the period 2013–2017 in Oceania, during which seizures of the drug quadrupled from 1 ton to 4.1 tons. The quantity of cocaine seized in New Zealand during the same period also increased, from 0.2 kg to 108 kg. A joint international investigation in September 2018 led to the seizure of around 500 kg of cocaine in Solomon Islands destined for Australia.[43]

Most of the cocaine intercepted in the fiscal year 2016–2017 at the border of Australia had crossed transpacific routes by air (46 per cent), by mail (25 per cent) and by sea (23 per cent), with the remainder being smuggled by aircraft passengers (6 per cent).[44] Similarly, most of the cocaine intercepted in New Zealand in 2017 (55 per cent) arrived in the country by air.

Data from Australia for the fiscal year 2016–2017 revealed a total of 47 departure points for the cocaine detected at the country's borders. The United States remained the primary departure point, followed by South Africa, Canada, Mexico, the United Kingdom, Brazil, France, Chile, Singapore, and Trinidad and Tobago.[45]

The trafficking of cocaine to Australia is highly profitable, given the high price of cocaine, which was estimated at a wholesale level of between 180,000 and 300,000 Australian dollars (equivalent to $136,000–$226,000) per kg in 2016–2017.[46] Such high prices make the smuggling of cocaine profitable even from high-price transit countries such as

41 UNODC, Drugs Monitoring Platform.

42 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17* (Canberra, 2018).

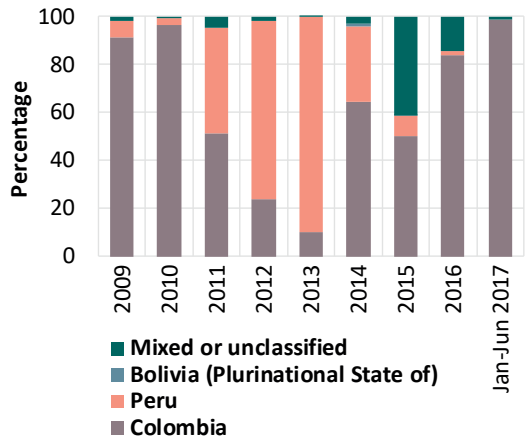
43 UNODC, Drugs Monitoring Platform.

44 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*.

45 Ibid.

46 Ibid.

FIG. 12 Origin of cocaine seized (bulk weight) in Australia, 2009–2017



Source: Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016–17* (Canberra, 2018).

the United States, where cocaine wholesale prices ranged between $4,000 and $50,000 per kg in 2017. In the major producing countries, cocaine can be bought at far lower prices: for example, for $1,500 per kg in Colombia or for $880 per kg in Peru in 2017. Yet direct and large-scale smuggling from those countries to Australia has not been documented by the authorities of Australia, suggesting that it may be considered too risky or that criminal groups in Australia have more direct links with trafficking groups in other countries.

Despite a high prevalence of cocaine use in Australia, the very high cocaine prices in the country, as well as in neighbouring New Zealand, seem to have helped to keep the quantity of cocaine consumed at quite a low level in both countries, compared with countries in other regions, as confirmed by wastewater analyses[47] and drug treatment data. However, high cocaine prices may have led to increasing drug trafficking activity, resulting in an increasing supply of cocaine and an increase in the likelihood of larger quantities of cocaine being seized in Australia than in the past.[48]

47 Australian Criminal Intelligence Commission, University of Queensland and University of South Australia, *National Wastewater Drug Monitoring Program: Report 6* (December 2018) and previous years.

48 Australian Criminal Crime Commission, Illicit Drug Data Report 2016-2017.

Forensic profiling of the cocaine seized in Australia in the past 5 years indicates a clear trend away from cocaine originating in Peru, which accounted for 90 per cent of all cocaine seized in 2013, to cocaine originating in Colombia, which accounted for 99 per cent of all cocaine seized in the first two quarters of 2017. This change may be the result of the sharp increase in coca leaf production in Colombia since 2013.

Demand for cocaine

In 2017, an estimated 18 million worldwide, or nearly 0.4 per cent of the adult population aged 15–64, had used cocaine in the past year. In parallel to an increase in the global supply of cocaine, there is an ongoing increase in cocaine use at the global level. This has been documented in the two main cocaine markets: North America and Western and Central Europe. Anecdotal information points to an emerging cocaine use market in Africa and Asia, but the availability of data on drug use in those regions is chronically limited.

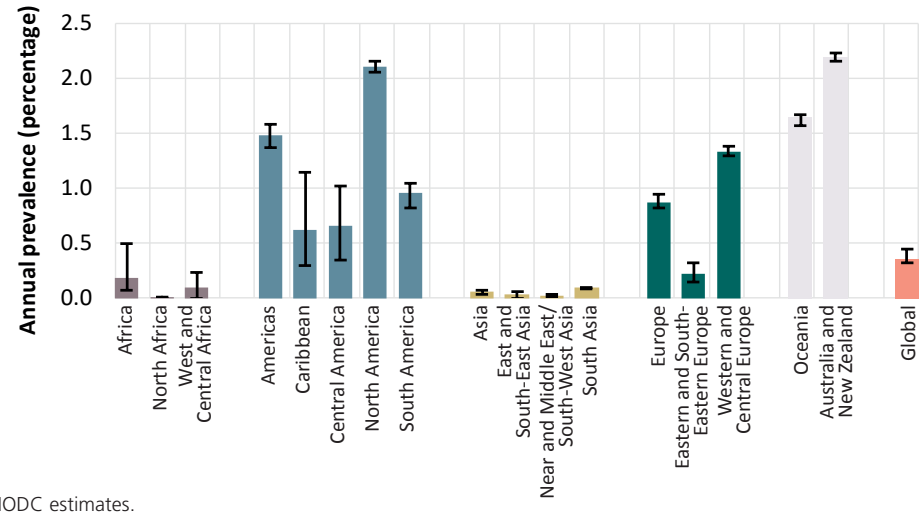
A high prevalence of cocaine use is estimated in Oceania (Australia and New Zealand, 2.2 per cent), North America (2.1 per cent), Western and Central Europe (1.3 per cent) and South America (1.0 per cent), subregions where there have been signs of an increase in cocaine use in recent years. Moreover, the use of cocaine takes place both among socially integrated drug users, who use the drug, for example, in recreational or nightlife settings, and among socially marginalized drug users who also use "crack" cocaine.[49]

Extent of cocaine use in Central and South America and in the Caribbean

Past-year prevalence of cocaine use in Central and South America in 2017 remained much lower than in North America or the other major cocaine markets. In South America, nearly 2.7 million people, or almost 1 per cent of the population aged 15–64, were estimated to be past-year cocaine users in 2017; both in Central America and the Caribbean, around

49 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications of the European Union, 2018).

FIG. 13 Cocaine use, by subregion, 2017



Source: UNODC estimates.

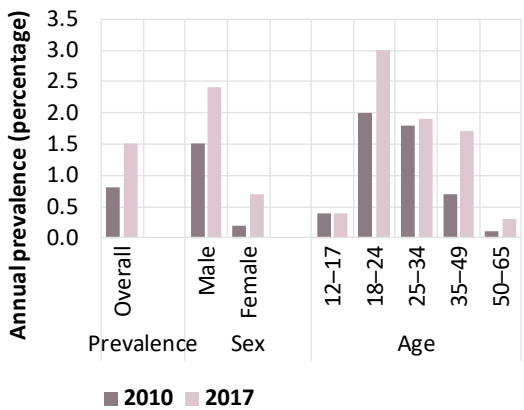
200,000, or 0.7 and 0.6 per cent of the population, respectively, were estimated to be past-year cocaine users in 2017.

In South America, among the countries where most recent data are available, Argentina, Brazil and Chile are the three countries with past-year prevalence of cocaine use higher than the subregional average. With nearly 1.5 million past-year cocaine and "crack" cocaine users, Brazil is actually the largest cocaine market in South America.[50]

The use of cocaine base paste, which was previously confined to cocaine-manufacturing countries has spread to many countries in South America; however, such use is difficult to estimate since people using cocaine base paste are usually from socially marginalized groups, which are not well captured by household surveys.[51]

In Argentina in 2017, 1.5 per cent of the population (2.4 per cent of males; 0.7 per cent of females) aged 12–65 had used cocaine in the past year.[52] The highest prevalence of past-year cocaine use (3 per cent) was reported among young people aged 18–24

FIG. 14 Cocaine use among the population aged 12–65, Argentina, 2010–2017



Source: SEDRONAR, *Consumo de Cocaína: Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas* (2017).

and, to a lesser extent, among adults aged 25–49. Cocaine base paste was estimated to have been used by 0.1 per cent of the general population in the past year, mainly by male users and adults aged 25–34, although this could be an underestimation of the extent of its use in Argentina. Over the period 2010–2017, cocaine use nearly doubled in Argentina, an increase that was more marked among women than among men, and among adults aged 35–49 than among other age groups.

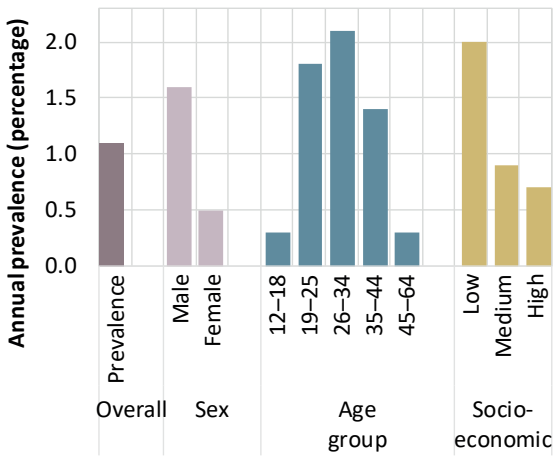
50 Based on UNODC estimate of 1.0 per cent of the population aged 15–64 in 2016.

51 Argentina, SEDRONAR, *Consumo de Cocaína: Estudio Nacional en Población de 12 a 65 años sobre Consumo de Sustancias Psicoactivas* (2017).

52 SEDRONAR, *Consumo de Cocaína.*

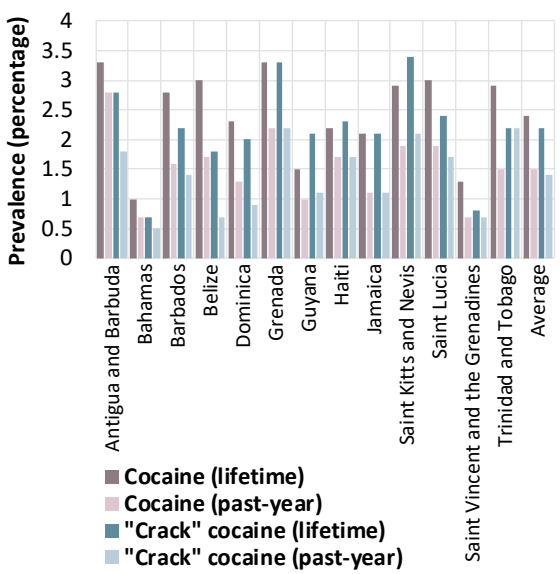
In Chile in 2016, the annual prevalence of the use of cocaine and cocaine base paste was estimated at 1.1 and 0.4 per cent, respectively, of the population aged 12–64.[53] The use of cocaine and cocaine base paste in Chile has been declining since 2000.

FIG. 15 Cocaine use, by demographic and socioeconomic characteristics, Chile, 2016



Source: SENDA, *Décimo Segundo Estudio Nacional de Drogas en Población General de Chile, 2016.*

FIG. 16 Cocaine and "crack" cocaine use among secondary school students in 13 countries in the Caribbean, 2016



Source: Inter-American Drug Abuse Control Commission, *A Report on Students' Drug Use in 13 Caribbean Countries: 2016.*

The past-year use of cocaine in Chile was higher among men than women, and highest among people aged 26–34. The past-month prevalence of cocaine use was estimated at 0.4 per cent of the population, which was the same level as in 2012. Among those who had used cocaine in the past month, the average number of days used was 3.8, and was higher among men (4 days) than women (1.9 days). In 2016, around one quarter of cocaine users were considered dependent, whereas in the case of the smaller group of cocaine base paste users, almost half were considered dependent or problematic users.

While recent information on the extent of cocaine use among the general population in any of the countries in the Caribbean is not available, secondary school surveys undertaken in 13 countries in the Caribbean in 2016 among students aged 14–17 show that the average lifetime and past-year prevalence of cocaine were 2.4 and 1.5 per cent, respectively, with a similar level of "crack" cocaine use among secondary school students.[54]

Increase in cocaine use in North America

In Canada, the past-year prevalence of cocaine use in 2017 was estimated at 2.5 per cent of the population aged 15 and older, significantly higher than in 2013 (0.9 per cent). Use was higher among men than women, and among young adults aged 20–24 than other age groups. Most of the increase in cocaine use since 2013 was due to an increase in use in men and in adults aged 20 and older.[55, 56]

In the United States in 2017, 5.9 million people – or 2.2 per cent of the population aged 12 and older

53 Chile, SENDA, *Décimo Segundo Estudio Nacional de Drogas en Población General de Chile, 2016* (Santiago, Observatorio Chileno de Drogas, diciembre de 2017).

54 Inter-American Drug Abuse Control Commission, *A Report on Students' Drug Use in 13 Caribbean Countries: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago* (OEA/Ser.L/XIV.6.46).

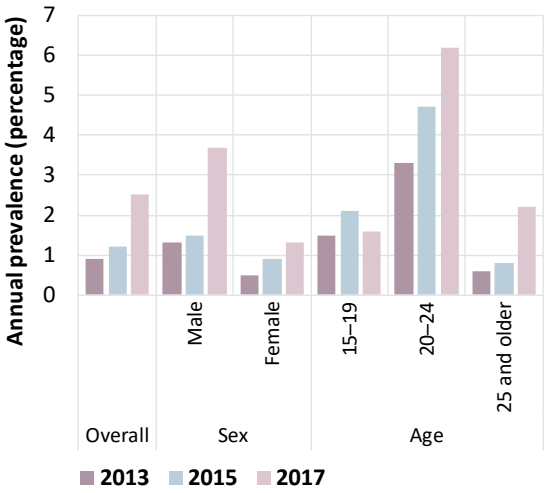
55 Health Canada, Canadian Tobacco, Alcohol and Drug Survey 2017.

56 Canadian Centre on Substance Use and Addiction, "Canadian Drug Summary: cocaine", 2019.

– had used cocaine in the past year,[57] with a higher prevalence of cocaine use estimated in states in the western (2.5 per cent) and north-eastern (2.3 per cent) parts of the country. As a long-term trend, the past-year use of cocaine reached a low in 2011 but has been increasing ever since, with an acceleration in that increase in 2017; the past-year use of "crack" cocaine and the past-month use of both cocaine and "crack" cocaine show similar trends. The increase in cocaine use occurred in the context of the increasing availability of cheaper and purer cocaine than before:[58] between 2012 and 2017 the average retail price per pure gram of cocaine decreased in the United States, while its average purity increased.[59]

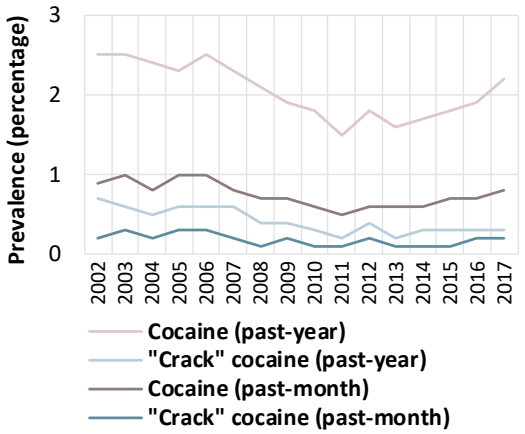
In 2017, cocaine use in the United States was estimated to be highest among young adults aged 18–25, with a past-year prevalence of 6.2 per cent; the use of "crack" cocaine was much lower, with 930,000 people, or 0.3 per cent of the population, aged 12 and older estimated to have used it in the past year. Among adults aged 18 and older, comparatively higher "crack" cocaine use was estimated among those aged 26 and older. Overall, among the 5.8 million past-year cocaine users in the country, more than one-third were estimated to be past-month users, the majority (54 per cent) of whom had used the drug 1 or 2 days in the past month; only 6 per cent were estimated to be daily or near-daily users of cocaine.

FIG. 17 Trends in cocaine use, by sex and age group, Canada, 2013–2017



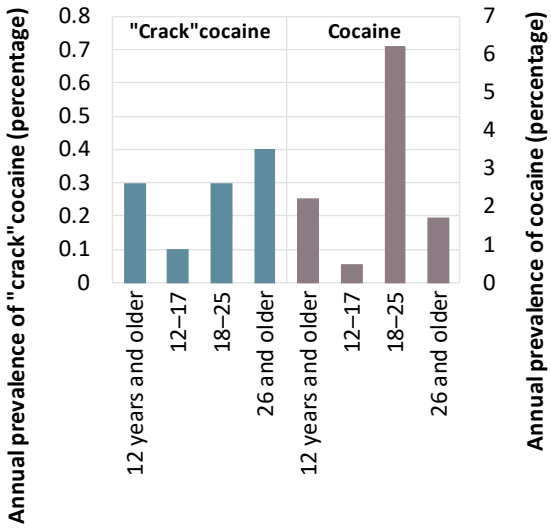
Source: Canadian Tobacco, Alcohol and Drug Survey 2013, 2015 and 2017.

FIG. 18 Trends in the use of cocaine and "crack" cocaine, United States, 2002–2017



Source: SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

FIG. 19 Cocaine and "crack" cocaine use, by age group, United States, 2017



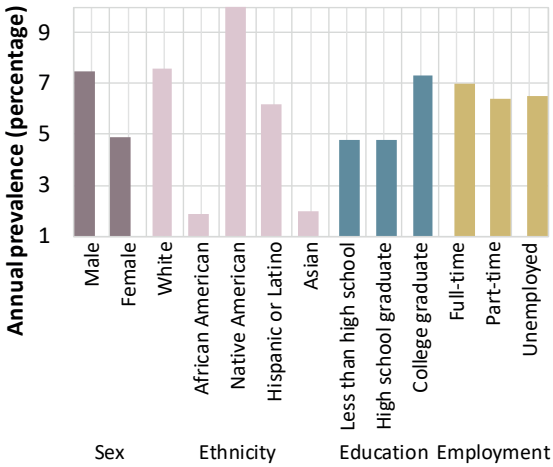
Source: SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

57 SAMHSA, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

58 DEA, *2018 National Drug Threat Assessment*.

59 Ibid.

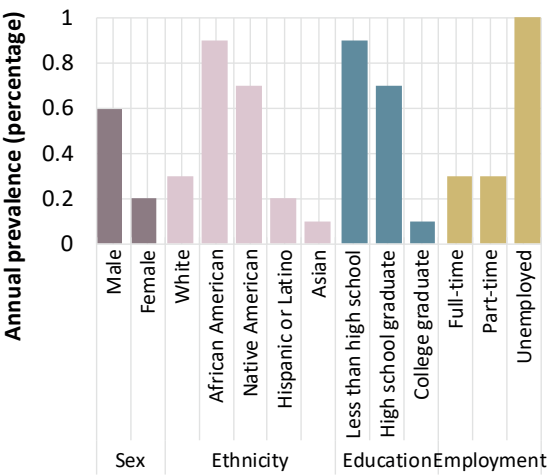
FIG. 20 Cocaine use among young people aged 18–25, by sociodemographic characteristics, United States, 2017



Source: SAMHSA, Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.

Note: in this figure the characteristics of young people aged 18–25 are presented, since cocaine use stands out among this age group.

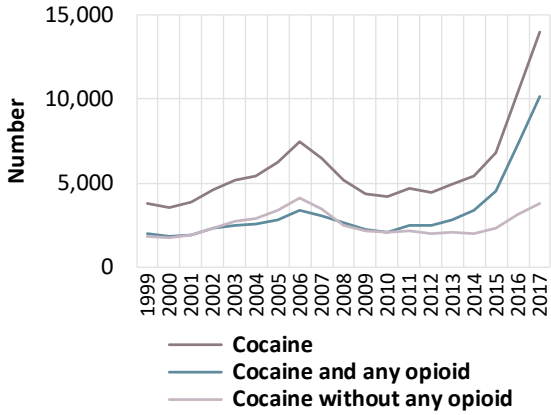
FIG. 21 Use of "crack" cocaine among adults aged 18 and older, by sociodemographic characteristics, United States, 2017



Source: SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.*

Note: in this figure, characteristics of adults aged 18 and older are presented, since the difference in prevalence among those aged 18–25 and those aged 26 and older are minimal. Also, when sociodemographic characteristics of "crack" cocaine users within the entire adult population aged 18 and older are analysed, characteristics such as ethnicity and employment status stand out for "crack" cocaine users.

FIG. 22 Cocaine overdose deaths, United States, 1999–2017



Source: United States, Centers for Disease Control and Prevention, National Center for Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC WONDER).

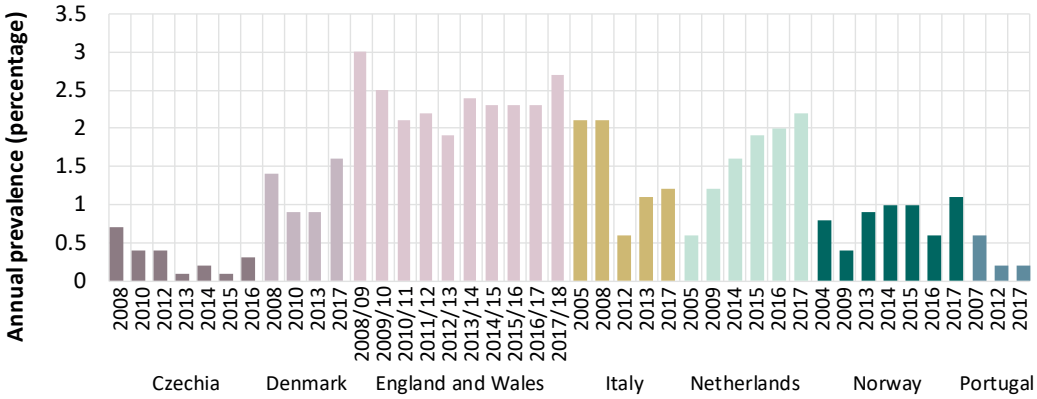
Generally, cocaine use in the United States is comparatively more common among socially integrated users, whereas cocaine injecting and the use of "crack" cocaine is observed more frequently among socially marginalized users. In young adults aged 18–25, the use of cocaine is higher among those who are male, white and college graduates, while use does not differ according to employment status; however, in 2017, the past-year use of cocaine among Native Americans was highest among all ethnic groups. Among adults aged 18 and older, "crack" cocaine use is comparatively higher among those who are male, African American, have an educational level lower than high school and are unemployed.[60]

In the United States, overdose deaths attributed to cocaine use have also been increasing (doubling over the period 2007–2017), especially since 2014. However, this increase has been largely attributed to deaths involving cocaine and opioids, in particular synthetic opioids (fentanyl and analogues). This is in line with reports of cocaine being mixed or adulterated with fentanyl and its analogues in the United States.[61]

60 SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.*

61 DEA, *2018 National Drug Threat Assessment.*

FIG. 23 Trends in cocaine use in countries in Western and Central Europe that reported new survey results



Source: UNODC, responses to the annual report questionnaire; EMCDDA and national reports.

Increase in cocaine use also observed in Western and Central Europe

With an estimated 4.2 million past-year users (1.3 per cent of the population aged 15–64) in 2017, the use of cocaine is also high in Western and Central Europe, which accounts for some 90 per cent of all the cocaine users in Europe as a whole, and where more than half of cocaine users are young people aged 15–34. Among the countries in Western and Central Europe that reported new survey data in 2017, most countries report an increase in cocaine use. There is also evidence of an increase in the availability of cocaine of the highest reported purity for over a decade in the European Union.[62]

As in the United States, the use of cocaine in Europe also differs between socially integrated users, who typically snort powder cocaine, and marginalized users, who typically inject cocaine or smoke "crack" cocaine, sometimes along with opioids. In the United Kingdom, for example, 0.9 per cent of the population aged 15–64 was estimated to have used opioids and/or "crack" cocaine in 2016–2017, while the prevalence purely of "crack" cocaine use in that age group was estimated at 0.5 per cent. The combined prevalence of opioid and "crack" cocaine use in the United Kingdom increased significantly (by 8.5 per cent) from 2011–2012 to 2016–2017.[63]

The number of first-time entrants in treatment for cocaine use disorders has also increased over the past two years in European Union member states, although three quarters of the cocaine users who accessed specialized drug treatment services for the first time were reported in just three countries: Italy, Spain and the United Kingdom. Among all cocaine users entering drug treatment in the European Union, one-third were seeking treatment for cocaine use disorders only, while the rest also reported the use of secondary substances, especially alcohol (31 per cent) and cannabis (26 per cent), but also heroin and other opioids. Many of the "crack" cocaine users entering treatment reported using heroin as a secondary drug.[64]

Recent increases in the number of people entering treatment for "crack" cocaine use disorders were reported in Italy and the United Kingdom. In the United Kingdom, the number of people entering treatment for "crack" cocaine use disorders increased by 18 per cent, and those with both "crack" cocaine and opioid use disorders – representing half of opioid users in treatment – increased by 3 per cent from 2017 to 2018.[65] Nevertheless, the use of

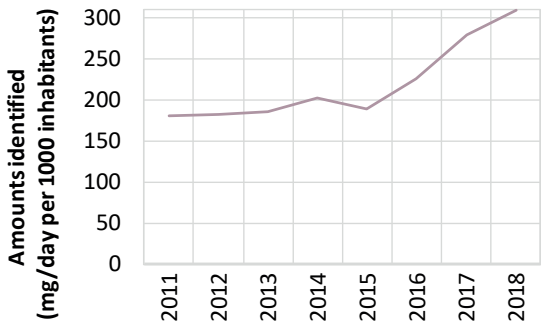
62 EMCCDA, *European Drug Report 2018*.

63 Gordon Hay, Anderson Rael dos Santos and Zoe Swithenbank, *Estimates of the Prevalence of Opiate Use and/or Crack Cocaine Use, 2016-17: Sweep 13 Report* (Liverpool, Public Health Institute, Liverpool John Moores University, March 2019).

64 EMCCDA, *European Drug Report 2018*.

65 Public Health England, *Adult Substance Misuse Statistics from the National Drug Treatment Monitoring System (NDTMS)*,

FIG. 24 Benzoylecgonine (cocaine metabolite) found in wastewater in 78 cities in Europe, 2011–2018



Source: UNODC calculations based on Sewage Analysis CORe group Europe (SCORE).

Note: Average quantity of benzoylecgonine found in wastewater in 78 cities (82 sites) weighted by the population of the sites: assumption of gradual increase/decrease in years in which no analysis took place in a city and no change since latest available data.

"crack" cocaine is much lower among the general population than the use of cocaine in the European Union. In England and Wales, for example, "crack" cocaine was used in the past year by 0.1 per cent of the general population aged 16–59 in 2017–2018.[66] This compares with 2.6 per cent who were past-year cocaine users, although the vast majority were sporadic users, more than half reporting using cocaine once or twice in the past year and only 1 per cent reporting daily or near-daily use of cocaine.

The overall increase in cocaine consumption in Europe in recent years is even more noticeable in wastewater analyses, which suggest an increase of over 70 per cent since 2011, mostly since 2015, in the quantities of cocaine consumed in 78 cities in 20 countries in Europe over the period 2011–2018.[67] Western Europe not only dominates the region in terms of cocaine use, but also in terms of cocaine consumption based on the quantity of cocaine metabolites (benzoylecgonine) found in wastewater.[68] All of the cities with large per-capita quantities of cocaine metabolites found in their wastewater are located in Western Europe, in particular in Belgium, the Netherlands, France, Spain, Switzerland and the United Kingdom, while smaller quantities were found in cities in Northern Europe (notably Finland), in a number of countries in Central Europe (notably Czechia and Slovakia) and in the Baltic area (Lithuania).[69] Data also show that an east-west divide exists in Germany, where cities located in what used to be East Germany reported small per capita quantities of cocaine in their wastewater, while those located in the former West Germany reported levels above the European average.[70]

Increase in cocaine use in Australia

In Australia, 2.5 per cent of the population aged 14 and older were estimated to have used cocaine in the past year, making the prevalence of cocaine use in 2016 the highest estimate since 2001.[71] The highest estimated prevalence of cocaine was among young adults aged 20–29, in both the past year (6.9 per cent) and the past month use (2.4 per cent). It is interesting to note, however, that the average age of those who reported cocaine use in the past year rose from 28 years in 2001 to 31 years in 2016. As in other large cocaine markets, the majority of cocaine users reported sporadic use of cocaine, with 64 per cent of past-year cocaine users reporting using it once or twice a year, around 10 per cent using it about once a month and around 3 per cent using it once a week or more. Cocaine use was reported as being higher among people with a post-high school qualification, those currently in employment and those residing in major cities. Polydrug use was also common among cocaine users, with nearly all cocaine users reporting concurrent use of alcohol, 30 per cent reporting use of cannabis and 27 per cent use of "ecstasy".[72]

PHE publications gateway No. 2018575 (London, November 2018).

66 United Kingdom, Home Office, *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales*, Statistical Bulletin 14/18 (July 2018).

67 UNODC calculations based on Sewage Analysis CORe group Europe (SCORE). For details of the calculations, see the online Methodological Annex of this report.

68 Benzoylecgonine is the main cocaine metabolite, a substance formed in the transformation of cocaine in the body, which is expelled through urination.

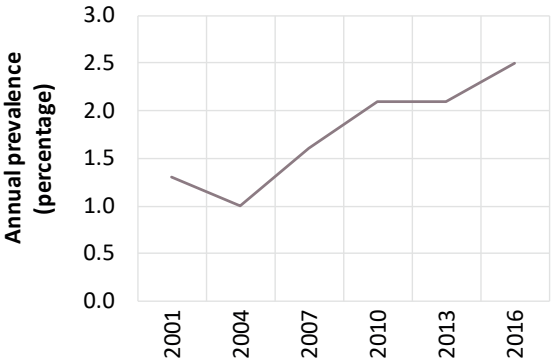
69 UNODC calculations based on Sewage Analysis CORe group Europe (SCORE).

70 Ibid.

71 Australian Institute of Health and Welfare, "National drug strategy household survey – 2016, detailed findings", 2017.

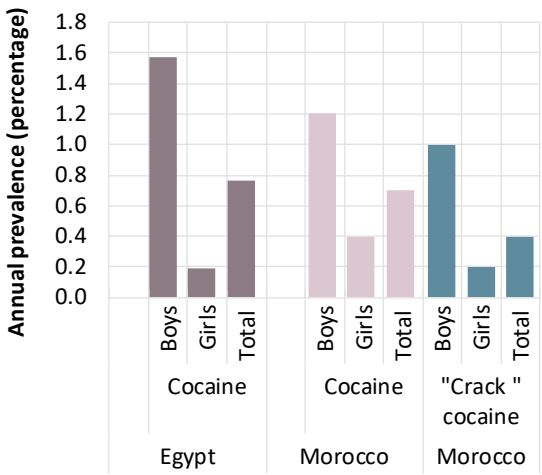
72 Australian Institute of Health and Welfare, "National drug strategy household survey 2016: detailed findings", 28

FIG. 25 Cocaine use in Australia among the population aged 14 and older, 2001–2016



Source: Australian Institute of Health and Welfare, "National drug strategy household survey 2016: detailed findings", 28 September 2017. Data tables: chapters 5 – illicit drug use.

FIG. 26 Cocaine and "crack" cocaine use among secondary school students in Egypt and Morocco, by sex, 2016



Sources: "MedSPAD 2016 in Egypt: results of the first Mediterranean School Survey Project on Alcohol and other Drugs (MedSPAD) in Egypt" (December 2017); Fatima El Omari, Maria Sabir and Jallal Toufiq, *Résultat de l'enquête MedSPAD III: Maroc 2017* (2018).

The upward trend in cocaine use shown in household survey data up until 2016 in Australia may have continued in the subsequent years. According to wastewater analyses undertaken across Australia in 2018 – in 58 sites covering 13 million people[73] – per-capita quantities of cocaine consumed over the period August 2017–August 2018 increased 35 per cent, compared with the period August 2016 –August 2017, which was greater than the increase reported for any other drug in wastewater analysis in Australia.[74] Confirming data from other sources, wastewater analysis also suggests that the highest level of cocaine consumption in Australia takes place in Sydney, the largest city.

However, despite an increase since 2014, based on wastewater data, per-capita cocaine consumption in Australia seems to be much lower than in Europe. Analysis of wastewater in Canberra, which reports levels of per-capita cocaine consumption close to the national average,[75] suggests that the level of benzoylecgonine found in 2018 was still 38 per cent lower than the average level in Europe. This was despite the fact that the levels reported in the city had doubled in 2018 from a year earlier and were three times as high as in 2014, the year that wastewater analysis started in the city.[76]

Cocaine use in Africa and Asia remains lower than in other regions

Past-year cocaine use in Africa in 2017 is estimated at between 0.02 and 0.40 per cent of the population aged 15–64, or between 160,000 and 2.6 million past-year users. Meanwhile, Asia is the region where the prevalence of cocaine use is estimated to be the lowest: between 0.04 and 0.07 percent but due to its population translates into 1.1 and 2.2 million past-year users. Those two regions suffer from large data gaps, however, which make any trend analysis very difficult.

Among the countries in Africa where recent survey data are available, the past-year prevalence of cocaine use in Nigeria in 2017 was estimated at 0.1 per cent, or roughly 92,000 past-year cocaine users aged 15–64, of whom approximately one-quarter were

September 2016. Data tables: chapters 5 – illicit drug use.

73 Australian Criminal Intelligence Commission, University of Queensland, University of South Australia, *National Wastewater Drug Monitoring Program*.

74 Ibid.

75 Ibid.

76 UNODC calculation based on data from the Sewage Analysis CORe group Europe (SCORE).

high-risk cocaine users.[77, 78] Kenya has a similar prevalence of cocaine use: 0.1 per cent of the population aged 15–64 in 2016, or around 28,000 past-year cocaine users.

In North Africa, where there are no recent data on the extent of cocaine use in the general population, the extent of cocaine use among secondary school students is moderately high. In Egypt, cocaine use was reported by 1.6 per cent of boys and 0.2 per cent of the girls aged 15–19,[79] while in Morocco, 1.2 per cent of boys and 0.4 per cent of girls aged 15–17 reported past-year use of cocaine in 2016. Moreover, in Morocco, 0.7 per cent of boys and 0.1 per cent of girls reported past-month use of cocaine or "crack" cocaine.[80] Among the students who reported cocaine use in the past month in Morocco, the majority had either used it once (39 per cent) or between two and five days (35 per cent) in the past month. However, the frequency of use was higher among "crack" cocaine users, with 38 per cent reporting having used that substance on between two and five days, and around 35 per cent on 10 days or more in the past month.

Recent data on the extent of cocaine use are not available from most countries in Asia; where data are available, however, cocaine use remains quite low. For example, in 2016, roughly 56,000 people in the Philippines and 3,250 people in Thailand were estimated to be past-year cocaine users, which was less than 0.1 per cent of the population aged 15–64.[81] In Pakistan in 2012, around 13,000 people, or 0.01 per cent of the adult population, were estimated to have used cocaine in the past year.[82] In India, past-year use of cocaine was reported by around 0.2 per cent of the male and 0.01 per cent of the female population aged 10–75 (around 1 million people) in 2018.[83] Moreover, while many countries in Asia report qualitative information on trends in cocaine use to UNODC, suggesting that cocaine is used by some people in those countries, survey data are not available in most of those countries to help determine the extent and patterns of, and trends in, cocaine use in the region.[84]

77 UNODC and Government of Nigeria, *Drug use in Nigeria 2018* (Vienna, 2019).

78 For the purpose of the present report, high-risk drug users are defined as those who had used opioids, "crack"/cocaine or amphetamines in the past 12 months and for at least five times in the past 30 days.

79 Egypt, General Secretariat of Mental Health and Addiction Treatment and Pompidou Group of the Council of Europe, "MedSPAD 2016 in Egypt: results of the first Mediterranean School Survey Project on Alcohol and Other Drugs (MedSPAD) in Egypt" (December 2017).

80 Jallal Toufiq, "Drug use among Moroccan youth: MedSPAD Surveys", power point presentation, Lisbon, October 2017.

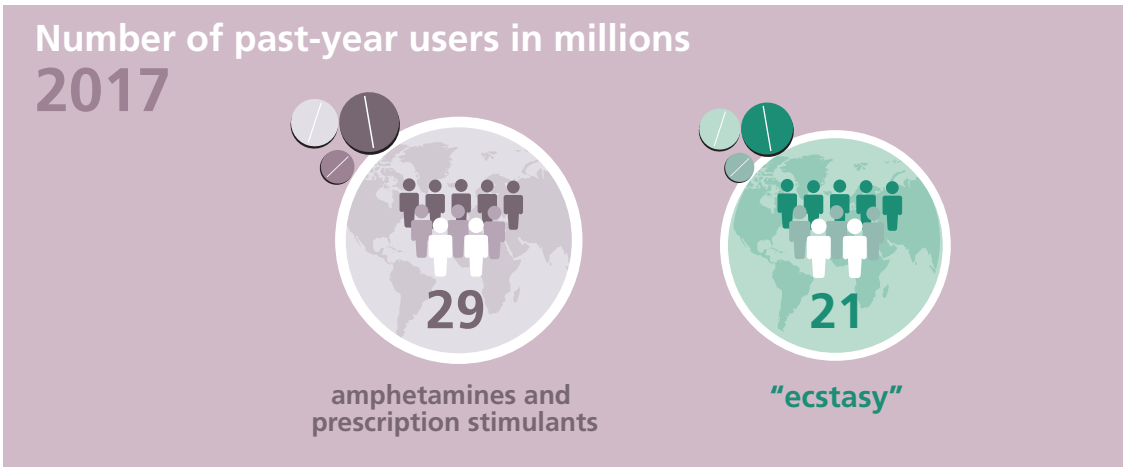
81 The estimate for Thailand is reported in Darika Saingam "Substance abuse policy in Thailand: current challenges and future strategies", *Journal of Drug and Alcohol Research*, vol. 7 (2018), pp. 1–10.

82 UNODC and Pakistan, Ministry of Interior and Narcotics Control, *Drug Use in Pakistan 2013* (Islamabad, 2014).

83 Atul Ambekar and others, *Magnitude of Substance Use in India 2019* (New Delhi, Ministry of Social Justice and Empowerment, 2019).

84 Armenia, China (including Hong Kong, China, and Macao, China), Iran (Islamic Republic of), Israel, Japan, Jordan, Lebanon, Mongolia, Pakistan, the Philippines, the Republic of Korea, Saudi Arabia, Singapore, Sri Lanka, the Syrian Arab Republic, Thailand and the United Arab Emirates have indicated the use of cocaine in the annual report questionnaire for 2016 and 2017.

AMPHETAMINE-TYPE STIMULANTS



Supply of amphetamine-type stimulants

Manufacture of amphetamine-type stimulants continues to be dominated by methamphetamine

Because clandestine laboratories that manufacture ATS can be located anywhere, determining the precise location of manufacture of synthetic drugs is more challenging than of plant-based drugs, for which the location of production can be determined using remote-sensing technology. Moreover, while the dismantling of clandestine laboratories and the reports of "country of origin" of the drugs seized in different countries may point to manufacturing locations and trafficking routes, it is difficult to estimate the quantities of those drugs manufactured.

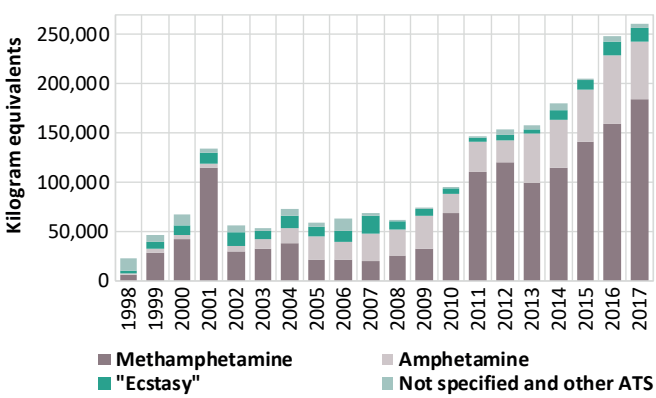
Over the period 2013–2017, Member States reported the dismantling of some 36,600 clandestine laboratories used in the manufacture of ATS. Around 96 per cent of those laboratories were manufacturing methamphetamine; 2 per cent, amphetamine; 1 per cent, "ecstasy"; and the rest manufactured other stimulants.

Seizures of ATS have increased over the past two decades

Seizures of ATS increased sharply from the second half of the 1990s until 2001 and over the period 2009–2017, when the quantity of amphetamine and "ecstasy" doubled and that of methamphetamine quintupled. Data for 2017 show an ongoing increase from the previous year in the quantity of methamphetamine seized at the global level (an increase of 16 per cent) while that of amphetamine decreased (a decrease of 18 per cent) and the quantity of "ecstasy" remained stable.

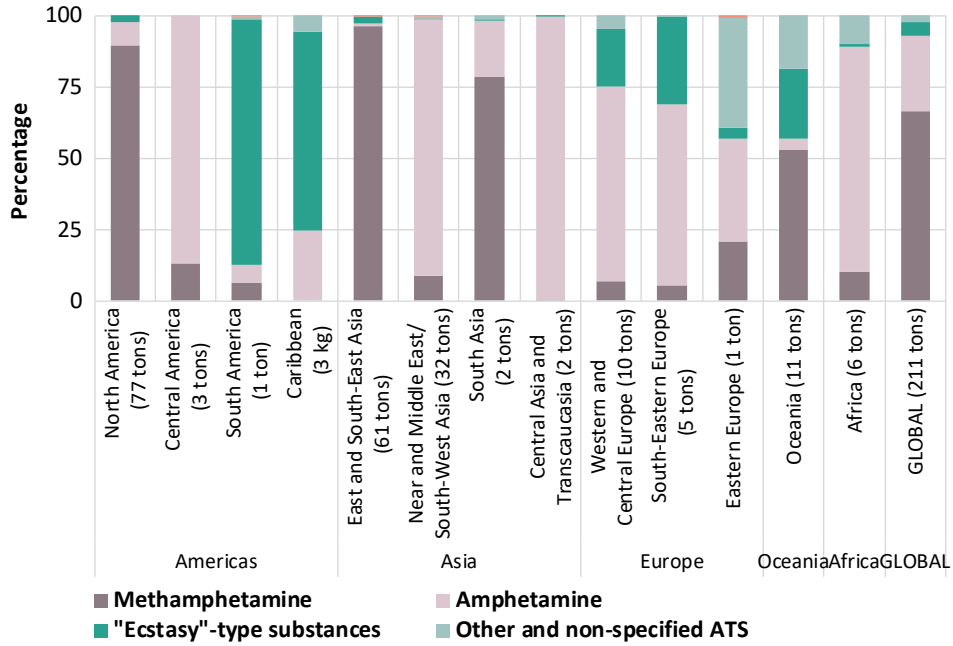
In most years since 1998, the largest quantity of ATS seized was of methamphetamine, which accounted for 66 per cent of the total quantity of ATS seized globally over the period 2013–2017, followed by amphetamine (26 per cent of the total) and "ecstasy" (5 per cent).

FIG. 27 Global quantity of amphetamine-type stimulants seized, 1998–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 28 Distribution by substance of the average annual quantity of amphetamine-type stimulants seized, by subregion, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

The distinction between seizures of amphetamine and methamphetamine posed challenges, however: the content of 1 per cent of the global quantity of ATS seized over the period 2013–2017 was not accurately reported, with seizures of unclear "amphetamine/methamphetamine" content being reported, mostly in West and Central Africa, which suggests an ongoing lack of forensic resources in that subregion. Elsewhere, undefined seizures of "speed", which were mostly reported in Western and Central Europe (including the United Kingdom, the Netherlands and Belgium) are likely to have consisted of amphetamine.

Other stimulants (including MDPV, methcathinone, methylone, several other cathinones, dimethoxyamphetamine and several piperazines) accounted for 0.4 per cent of the global quantity of ATS seized since 2013.

Seldom seized in general, prescription stimulants accounted for 0.2 per cent of the global quantity seized, suggesting that most ATS seized were not diverted from licit sources but manufactured in clandestine laboratories. Only small quantities of pharmaceutical stimulants seized were reported over the period 2013–2017 (0.3 tons on average per year): the largest amount in Asia, mainly in East and South-East Asia and the Near and Middle East. To the extent that they were explicitly mentioned, the most seized substances were methylphenidate in North and South America, and phentermine and methylphenidate in Western and Central Europe and Oceania. Methylphenidate and phentermine were also the two pharmaceutical stimulants manufactured in the greatest quantities at the global level in 2017 (70.7 and 32.3 tons, respectively).[85]

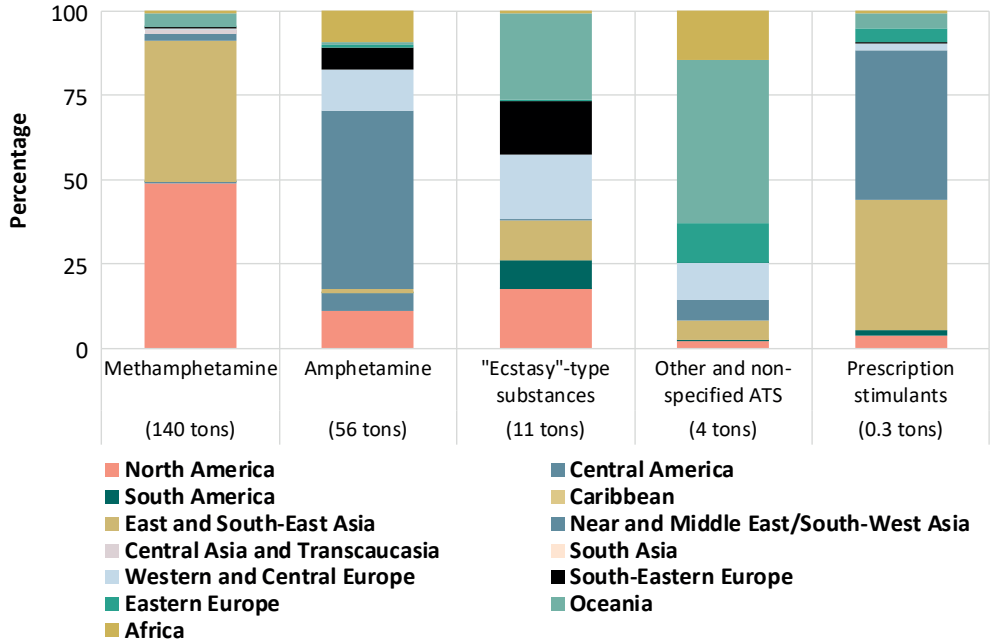
Moreover, INCB data suggest that the global licit manufacture of "amfetamine" (18.5 tons in 2017) and of "metamfetamine"[86] (0.9 tons in 2017)[87]

85 *Psychotropic Substances: Statistics for 2017–Assessment of Annual Medical and Scientific Requirements for Substances in Schedule II, III and IV of the Convention on Psychotropic Substances of 1971* (E/INCB/2018/3), pp. 52–53.

86 The spelling of licitly manufactured "amfetamine" or "metamfetamine" (as used by INCB) differs from that of illicitly manufactured "amphetamine" or "methamphetamine".

87 E/INCB/2018/3.

FIG. 29 Regional distribution of the average annual quantity of amphetamine-type stimulants seized, by drug, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

would not have been sufficient to supply the illicit markets, where seizures alone amounted to 58 tons of amphetamine and 184 tons of methamphetamine in 2017. This indirectly confirms that most ATS found in the illicit markets comes from illicit manufacture in clandestine laboratories rather than from diversions from licit channels.

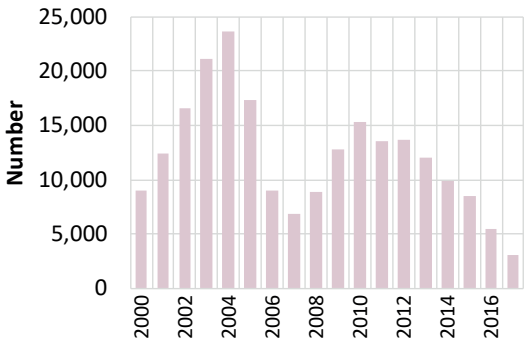
While the number of countries reporting seizures of amphetamine and of "ecstasy" remained relatively stable, at roughly 100 in each of the periods 2003–2007 and 2013–2017, the number of countries reporting seizures of methamphetamine rose by 50 per cent in the last decade, which suggests that there has been an increase in the geographical spread of methamphetamine and that most of the increase in ATS trafficking at the global level over the past decade was due to trafficking in methamphetamine.

Different substances dominated the quantities of ATS seized in different regions and subregions over the period 2013–2017: methamphetamine in North America, East and South-East Asia, South Asia, Central Asia and Transcaucasia and Oceania; and amphetamine in the Near and Middle East/South-West Asia, Europe, Africa and Central America. South America and the Caribbean emerged as the only subregions where seizures of "ecstasy" were predominant among all ATS intercepted in that five-year period.

Global methamphetamine manufacture is dominated by North America and East and South-East Asia

While 50 countries were identified by Member States as possible countries of origin for methamphetamine manufacture, about 35,000 clandestine methamphetamine laboratories were reported dismantled in 31 countries over the period 2013–2017. The majority of those laboratories (90 per cent) were dismantled in North America, mostly in the United States, followed by Mexico and Canada. The United States reported the dismantling of 3,036 methamphetamine laboratories in 2017, in which year a total of 3,661 laboratories were dismantled worldwide. Most of the laboratories reported in the United States were "kitchen labs", producing

FIG. 30 Methamphetamine manufacturing facilities dismantled in the United States, 2000–2017



Source: El Paso Intelligence Center, National Seizure System as of June 2018, in DEA, *2018 Drug Threat Assessment.*

methamphetamine for the local market, with a small output compared with those detected in other countries, such as the several large-scale, industrial-size laboratories found in Mexico and in East and South-East Asia that were producing methamphetamine for export markets.

The number of clandestine laboratories detected in the United States fell by about 80 per cent over the period 2010–2017 and by 87 per cent after the peak in 2004.[88] That was probably the result of improved precursor control (notably through the regulation of over-the-counter sales of methamphetamine precursor chemicals such as ephedrine preparations and pseudoephedrine) and ongoing efforts to dismantle laboratories, which acted as a deterrent to domestic methamphetamine manufacture.[89] The initial decline in manufacture after 2004 may have initially helped reduce domestic demand for methamphetamine in the United States: annual prevalence of methamphetamine use fell from 0.7 per cent in 2002 to 0.3 per cent in 2008.[90]

The ongoing decline after 2010 in the numbers of dismantled laboratories over the past few years was, however, in contrast to the upward trend in a number of indicators pointing to an expansion of the methamphetamine market in the United States, both in terms of supply of the drug (rising seizures, falling purity-adjusted prices) and demand (rising prevalence rates, positive tests among the general workforce, treatment admissions and deaths). The annual prevalence of methamphetamine use doubled over the period 2008–2017 to 0.6 per cent of the population aged 12 and above.[91]

These discrepancies may be explained by an apparent decline in the domestic supply of methamphetamine combined with rapidly growing illegal methamphetamine imports from clandestine manufacture sites in neighbouring Mexico, resulting from a kind of "balloon" effect caused by the diversification of the drug portfolio of Mexican organized criminal groups attempting to reduce their dependence on cocaine shipments from the cocaine-producing countries of South America. The marked growth in methamphetamine shipments intercepted along the south-western border of the United States over the past few years points in that direction.[92]

The next largest number of methamphetamine laboratories was dismantled in Asia (6 per cent of the global total), most notably in China and the Islamic Republic of Iran, which together accounted for 95 per cent of all such laboratories dismantled in Asia, while some clandestine laboratories were dismantled (by descending order of importance) in Malaysia, the Philippines, Indonesia, the Republic of Korea, Thailand, India and Myanmar. In addition, a number of other countries were identified as countries of origin for methamphetamine shipments, including countries in the Near and Middle East/South-West Asia and in Transcaucasia.

Similar to the trend reported in the United States, China has also reported a decreasing number of dismantled laboratories in recent years (for the manufacture of both methamphetamine tablets and crystalline methamphetamine),[93] which, in

88 United States, Department of Justice, Drug Enforcement Administration (DEA), *2018 National Drug Threat Assessment* (October 2018).

89 Ibid.

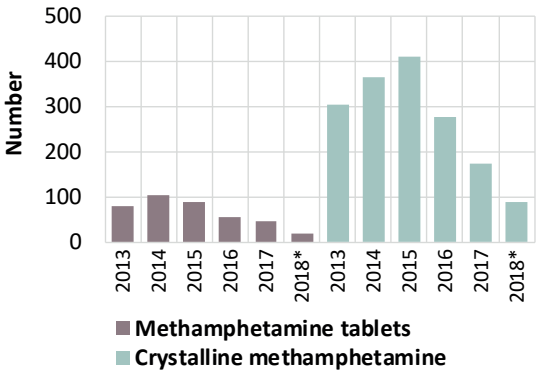
90 United States, Center for Behavioral Health Statistics and Quality, *Results from the 2014 National Survey on Drug Use and Health: Detailed Tables,* (Rockville, Maryland, SAMHSA, 2015).

91 United States, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables,* (Rockville, Maryland, SAMHSA, 2018).

92 DEA, *2018 Drug Threat Assessment.*

93 UNODC, *Synthetic Drugs in East and South-East Asia:*

FIG. 31 Methamphetamine manufacturing facilities dismantled in China, 2013–2018



Source: UNODC, Synthetic Drugs in East and South-East Asia: Trends and Patterns of Amphetamine-type Stimulants and New Psychoactive Substances, (March 2019).

**Data for 2018 cover the first 10 months of the year.*

combination with declines in quantities of methamphetamine found in wastewater in China,[94, 95] is likely to point to a decline in domestic manufacture of the drug. That trend is, however, coupled with rising illegal imports of methamphetamine from neighbouring Myanmar, mainly from areas outside the control of the Government of Myanmar in the eastern part of the country.[96]

Europe accounted for 3 per cent of all methamphetamine laboratories dismantled over the period 2013–2017, with almost 90 per cent of all such laboratories dismantled in Czechia (mostly "kitchen labs"), followed by Bulgaria, Germany, Austria, Slovakia, Poland and Lithuania.

Oceania (Australia and New Zealand) accounted for a limited share (1 per cent) of the global number of methamphetamine laboratories dismantled. It is likely, however, that a number of clandestine laboratories manufacturing amphetamines dismantled in recent years in Australia were actually manufacturing methamphetamine (the reporting made no distinction between amphetamine and methamphetamine). Moreover, most ATS precursors seized in Australia were ephedrine or pseudoephedrine, which points to the predominance of the manufacture of methamphetamine in the country.[97]

Africa accounted for less than 0.1 per cent of the global total of clandestine methamphetamine laboratories dismantled over the period 2013–2017, most notably Nigeria and, to a lesser extent, South Africa. Methamphetamine manufacture was also documented in Nigeria in 2018, as reflected in the dismantling of a further three laboratories in the first 10 months of the year.[98] To a lesser extent, a number of other African countries were reported (mostly by African countries) as countries of origin of methamphetamine, including, in descending order, Mozambique, Kenya, the United Republic of Tanzania, Benin and other countries in West Africa. However, in contrast to the manufacture of the drug in other regions, methamphetamine produced in Africa seems to be, to a significant extent, destined for overseas markets, in particular East and South-East Asia.

Available information suggests that most manufacture of methamphetamine in Africa, Asia, Europe and Oceania continues to use ephedrine or pseudoephedrine. By contrast, methamphetamine manufactured in North America, which also used to be manufactured with those precursors, is mostly manufactured nowadays using P-2-P synthesis

Trends and Patterns of Amphetamine-type Stimulants and New Psychoactive Substances–A Report from the Global SMART Programme (March 2019).

94 "Trends in methamphetamine and ketamine use in major Chinese cities from 2012 to 2016", poster presentation by Peng Du of the Laboratory of Earth Surface Processes, College of Urban and Environmental Sciences, Peking University at the third international conference "Testing the waters 2017: wastewater-based epidemiology–current applications and future perspectives", held in Lisbon on 26–27 October 2017.

95 Zhe Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018 detected by wastewater-based epidemiology in Dalian, China", *Drug and Alcohol Dependence,* vol. 194 (January 2019), pp. 302–309.

96 UNODC, *Synthetic Drugs in East and South-East* Asia; National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2018* (Beijing, 2018) and UNODC, annual report questionnaire.

97 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17* (Canberra, 2018).

98 *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2018 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2018/4).

routes, with P-2-P pre-precursors such as phenylacetic acid and a number of non-scheduled chemicals, including APAAN,[99] a substance scheduled at the international level in March 2019.[100] The shift towards the use of P-2-P and its precursors over the past decade seems to have been a consequence mainly of improved controls of pseudoephedrine in Canada, Mexico and the United States. A few years ago, P-2-P tended to be manufactured illegally from phenylacetic acid or its non-controlled derivatives, but another forensic profile has emerged in Mexico since 2014. P-2-P then started to be manufactured using benzaldehyde and nitroethane as the initial precursor chemicals,[101] i.e., two substances not under international control, although they have been under national control in Mexico since October 2015.[102] By the second half of 2017, 54 per cent of all samples of Mexican methamphetamine analysed in the United States had been manufactured using this synthesis route for the illicit manufacture of P-2-P, while 12 per cent of P-2-P samples had been manufactured from phenylacetic acid, a substance under international control.[103]

According to United States authorities, most of the chemicals used in the clandestine manufacture of methamphetamine in Mexico continue to be sourced from companies in China,[104] although there is now evidence of purchases of chemicals from companies in other countries, most notably India.[105] One case revealed by United States authorities showed a shipment of 17.6 tons of benzaldehyde from India transiting the United States en route to Haiti, but investigations following its interception at a port in the United States in November 2017 revealed that the chemical had actually been destined for a port in Mexico.[106]

99 Ibid.

100 UNODC Laboratory and Scientific Section Portals, "UNODC: nine substances and three precursors "scheduled" at the 62nd session of the Commission on Narcotic Drugs". Available at www.unodc.org.

101 For a more detailed discussion, see *World Drug Report 2017: Market Analysis of Synthetic Drugs–Amphetamine-type Stimulants, New Psychoactive Substances* (United Nations publication, Sales No.E.17.XI.10).

102 DEA, *2018 National Drug Threat Assessment*.

103 Ibid.

104 Ibid.

105 Ibid.

106 Ibid.

Global methamphetamine market in expansion

The information available globally on methamphetamine, although limited, points to a market expansion over the past two decades. Qualitative information on methamphetamine supply provided by national experts, data on drug treatment facilities, prevalence data in countries based on survey data, and prices all suggest that the methamphetamine market has been expanding, in particular in the two largest "demand regions": South-East Asia and North America.

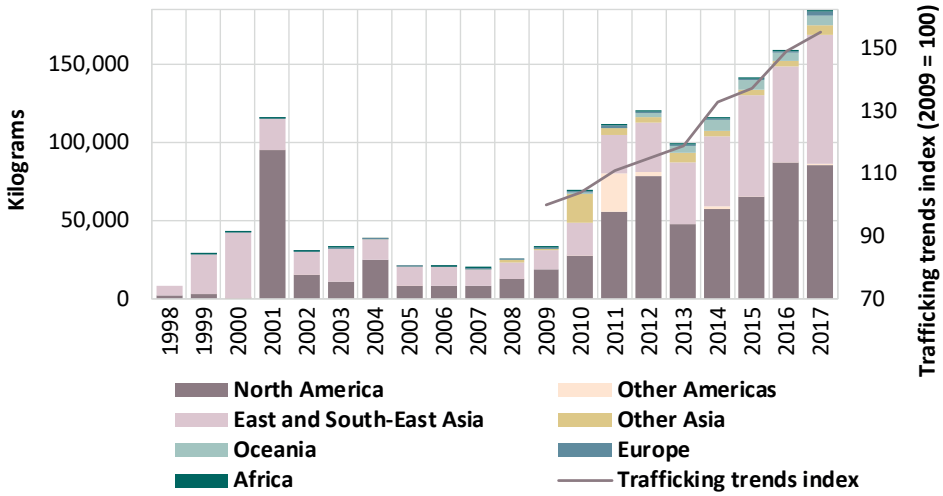
Indicators related to interdiction show two divergent trends in both of those subregions, however: the number of dismantled laboratories and quantities of seized precursors have been on the decline in East and South-East Asia and in North America, while quantities of seizures have been increasing sharply in both subregions. There is no specific evidence that can provide a solid explanation for those divergent trends, but considering the expanding dynamics of the market, one possibility could be that global interception capacity may have been shifting from manufacturing to distribution. This could be the result of a shift in the geographical location of manufacturing to countries with limited interdiction capacity, although the diverging trends could be partially explained by a shift towards fewer laboratories with greater output.

Methamphetamine trafficking continues to increase but remains mainly concentrated in North America and East and South-East Asia

Based on quantities of methamphetamine seized and qualitative information on trends in methamphetamine trafficking reported by Member States, trafficking in methamphetamine appears to have expanded over the past two decades, in particular since 2009.

In the past two decades, methamphetamine has mainly been seized in North America and in East and South-East Asia, which respectively accounted for 49 per cent and 42 per cent of global quantities of methamphetamine seized over the period 2013–2017, while seizures in Oceania (4 per cent), the Near and Middle East/South-West Asia (2 per cent), South Asia and Europe (1 per cent each) were lim-

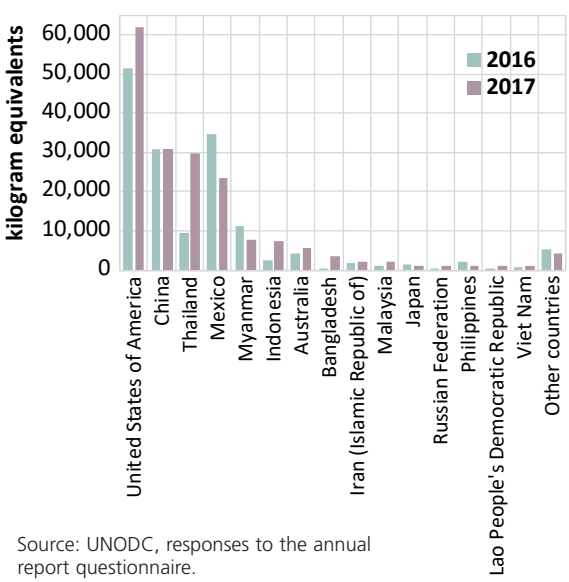
FIG. 32 Quantities of methamphetamine seized, 1998–2017, and methamphetamine trafficking trends index (2009 = 100)



Source: UNODC, responses to the annual report questionnaire.

ited by comparison. The largest quantities of methamphetamine seized in 2017 were reported by the United States followed by China, Thailand, Mexico and Myanmar. Marked increases from the previous year in the quantity seized in 2017 were reported most notably by the Russian Federation (38-fold increase) and Bangladesh (tenfold increase).

FIG. 33 Methamphetamine: countries of largest seizures, 2016–2017



Source: UNODC, responses to the annual report questionnaire.

Trafficking in methamphetamine may be stabilizing at a high level in North America

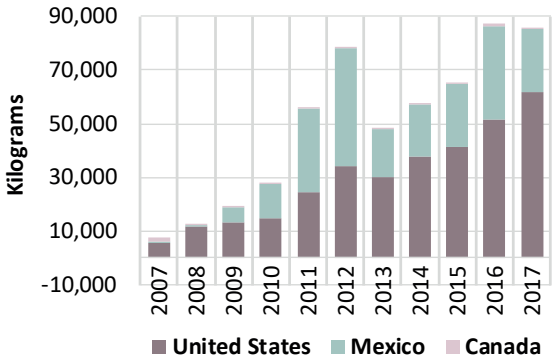
Despite the overall expansion of methamphetamine markets worldwide, based on seizures, most methamphetamine trafficking continues to be intraregional, for example, trafficking within North America or within East and South-East Asia. Smaller trafficking flows have been reported within Europe and from Africa to East and South-East Asia.

Quantities of methamphetamine seized in North America rose more than tenfold over the period 2007–2016 and stabilized in 2017. They were dominated by seizures reported by the United States, followed by Mexico.

Cross-border methamphetamine trafficking in North America is mainly from Mexico to the United States, and practically all the major transnational criminal organizations in Mexico seem to be involved in the smuggling of methamphetamine to the United States. They include the Sinaloa Cartel, the Jalisco New Generation Cartel, the Juárez Cartel, the Gulf Cartel, the Los Zetas Cartel and the Beltrán-Leyva Organization.[107] In parallel, outlaw motorcycle gangs continue to be involved in the distribution of methamphetamine within the United

107 Ibid., pp. 97–98.

FIG. 34 Quantities of methamphetamine seized in North America, 2007-2017



Source: UNODC, responses to the annual report questionnaire.

States.[108] The increased involvement of Mexican organized criminal groups in the trafficking of drugs other than cocaine contributed to the spread of methamphetamine trafficking from states in the west of the United States to the country as a whole, including the states in the eastern part of the country, which had previously been spared from the large-scale harmful use of methamphetamine.[109] The expansion of methamphetamine trafficking has gone hand in hand with the increasingly common practice of mixing fentanyls with other drugs, including methamphetamine. This practice has proved to be particularly harmful and was identified in most methamphetamine-related deaths reported in the north-eastern and mid-western states of the United States in 2017.[110]

The south-west border remains the main entry point for illegal imports of methamphetamine into the United States: 97 per cent of the methamphetamine seized by United States customs occurred at, or near, the country's south-west border in 2017. Quantities of methamphetamine seized in the United States as a whole doubled between 2012 and 2017, whereas those intercepted along the south-west border more than tripled during the same period, more than half being reported in the San Diego corridor in 2017.[111]

Trafficking modi operandi include concealment by human couriers on commercial flights, parcel services and the use of pick-up trucks and commercial buses. An emerging trend is the use of drones, which can easily overcome physical barriers on the border and whose operators can remain at a safe distance from the area where drugs are dropped, thereby reducing the potential risk of arrest.[112]

The purity[113] of methamphetamine found on the wholesale market in the United States continues to be very high, at over 95 per cent, over the period 2013–2017. Initially, the shift from the use of pseudoephedrine to P-2-P as the key precursor chemical used in the manufacture of methamphetamine meant that only a less potent racemic *d,l*-methamphetamine could be produced in Mexico instead of the more potent *d*-methamphetamine. This resulted in the potency[114] of methamphetamine found on the United States market decreasing from over 90 per cent in 2007 to around 60 per cent by 2009.[115] Initially, this decrease in potency was compensated by an increase in purity; later, organized criminal groups operating in Mexico soon developed methods of applying additional purification in order to increase potency[116] and by the first half of 2012 the average potency of methamphetamine on the United States market rose to 85 per cent. Potency amounted to 87 per cent in the first half of 2015, gradually increasing to 95 per cent by the second half of 2017, which suggests an increasing sophistication of methamphetamine manufacture in Mexico.[117]

Although most of the methamphetamine trafficking affecting North America is intended for markets within the subregion, smaller amounts of methamphetamine are also trafficked from North America

108 Ibid., pp. 110–112.

109 SAMHSA, "Reports and Detailed Tables from the 2017 National Survey on Drug Use and Health and previous years. Available at www.samhsa.gov.

110 DEA, *2018 National Drug Threat Assessment*.

111 Ibid.

112 Ibid.

113 Purity is defined as a measure of the amount of an illicit substance present in a sample compared with other substances in the sample such as adulterants, diluents or solvents.

114 Potency is defined as the measure of drug activity in terms of the dosage required to exert an effect on the body and is measured by the amount of the highly potent d-isomer present in the drug substance.

115 *World Drug Report 2010* (United Nations publication, Sales No.E.10.XI.13).

116 *World Drug Report 2011* (United Nations publication, Sales No.E.11.XI.10).

117 DEA Methamphetamine Profiling Program, quoted in *2018 National Drug Threat Assessment*, p. 60.

to other subregions, including other parts of the Americas, Oceania, East and South-East Asia and Western and Central Europe. According to seizure information provided by Member States, there seems to have been methamphetamine trafficking from Mexico to other countries in the Americas (Argentina, Brazil and Guatemala) and to a few countries in Asia (Japan, the Republic of Korea and the Philippines), Oceania (New Zealand) and Europe (Spain and Belgium) over the period 2013–2017. More recently, methamphetamine shipments have been intercepted en route from Mexico to the Netherlands for distribution in Europe. According to media sources, in May 2019 the Dutch authorities raided a river boat in the Netherlands with a full crystalline methamphetamine laboratory on board, apparently operated by members of a Mexican organized criminal group.[118, 119] The United States has been reported by other countries as a country of departure of methamphetamine for neighbouring Canada, Oceania (Australia and New Zealand), Asia (Japan and the Philippines) and Europe (Germany and Italy). Methamphetamine trafficked from Canada has also been reported in South America (Chile), Oceania (Australia and New Zealand) and Northern Europe (Iceland and Latvia).

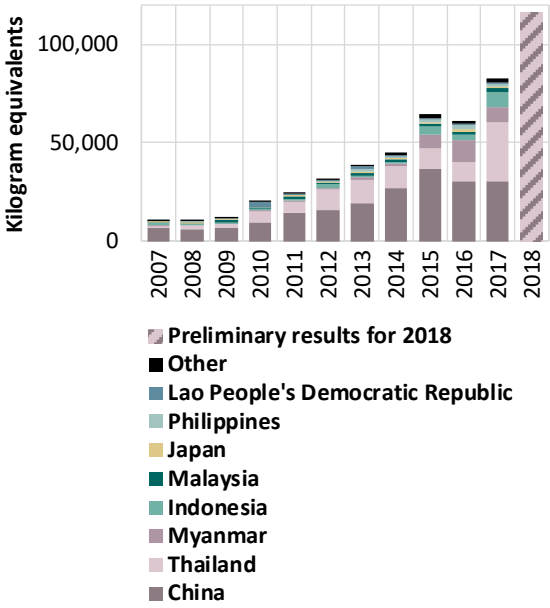
Signs of a marked expansion of methamphetamine trafficking in East and South-East Asia in 2017 and 2018

Quantities of methamphetamine seized in East and South-East Asia increased more than eightfold over the period 2007–2017 and, at 82 tons. Preliminary data for 2018 indicate a further sharp increase of around 42 per cent from the previous year, to 116 tons, in quantities of methamphetamine seized in East and South-East Asia.[120]

In most years in the past decade, the largest quantities of methamphetamine seized in East and South-East Asia were reported by China. However, the quantities of methamphetamine seized in Thailand in 2017 reached the same level as those reported by China, and preliminary data suggest that those reported by Thailand in 2018 may have exceeded those reported by China, reflecting underlying shifts in the methamphetamine market in South-East Asia.[121]

Methamphetamine seizures have been increasing in East and South-East Asia, in the form of tablets and crystalline methamphetamine. The amount of methamphetamine tablets seized annually in East and South-East Asia increased by 40 per cent in 2017 from the previous year to reach almost 450 million tablets. Preliminary data indicate a further rise to 745 million methamphetamine tablets seized in the subregion in 2018, equivalent to an increase of two thirds in 2018. Thailand accounted for the bulk of those seizures, with more than 515 million tablets

FIG. 35 Quantity of methamphetamine seized in East and South-East Asia, by country, 2007–2018



Sources: UNODC, response to the annual report questionnaire for the years 2007-2017; for the year 2018, UNODC, *Synthetic Drugs in East and South-East Asia.*

Note: At the time of writing, Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea and Thailand had all provided drug seizure data for the whole year 2018. China, Indonesia and Singapore provided data up to September 2018, Viet Nam for the first 11 months of 2018, Japan for the first half of the year 2018, and Taiwan Province of China for the first eight months of 2018.

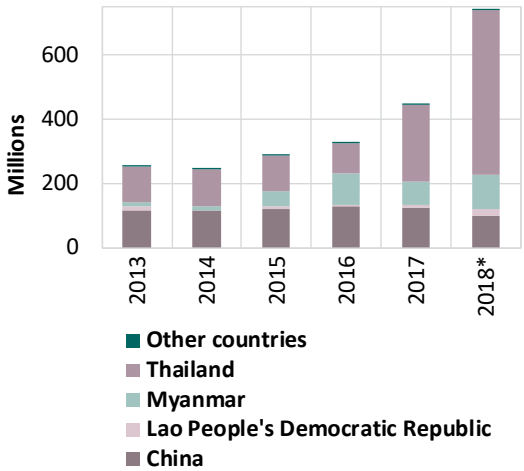
118 Janene Pieters, "Mexican cartel tied to booby-trapped floating drug lab in Dutch police sting", *NL Times*, 13 May 2019.

119 Daniel Boffey, "Booby trap scuppers police raid on Dutch floating crystal meth lab", *Guardian*, 13 May 2019.

120 UNODC, *Synthetic Drugs in East and South-East Asia*

121 Ibid.

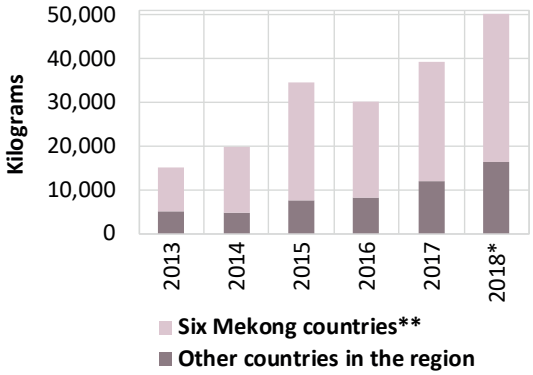
FIG. 36 Quantity of methamphetamine tablets seized in East and South-East Asia, by country, 2013–2018



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

**Data for 2018 include only those confirmed by countries in the region.*

FIG. 37 Quantity of crystalline methamphetamine seized in East and South-East Asia, by subregion, 2013–2018



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

**Data for 2018 are still preliminary; at the time of writing, Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea, and Thailand, all provided drug seizure data for the whole year 2018. China, Indonesia and Singapore provided data up to September 2018, Viet Nam for the first 11 months of 2018, Japan for the first half of the year 2018, and Taiwan Province of China for the first eight months of 2018.*

***The six Mekong countries are: Cambodia, China, Lao PDR, Myanmar, Thailand and Vietnam.*

reported seized – about 70 per cent of all seizures in 2018 confirmed to date.[122] Preliminary data suggest that 99 per cent of all methamphetamine tablets seized in East and South-East Asia were seized in the Greater Mekong subregion in 2018.[123]

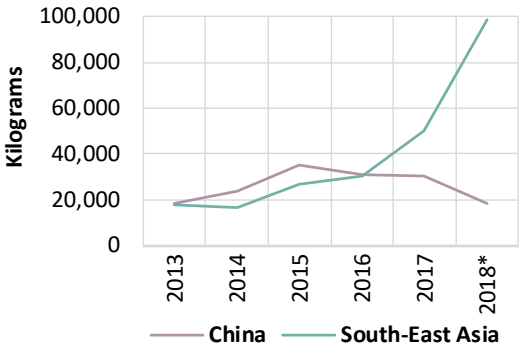
The typical purity of methamphetamine tablets encountered in East and South-East Asia has remained relatively stable in recent years, mostly within a range of 15 to 25 per cent.[124] However, retail prices of methamphetamine tablets have been sharply decreasing in several countries in the region in recent years, which when taken together with the sharp increase in seizures, suggests supply of methamphetamine outstrips demand in the subregion.[125]

Seizures, prices and purities also indicate an expansion of the crystalline methamphetamine market in East and South-East Asia. With the exception of 2016, quantities of crystalline methamphetamine seized in the subregion have been increasing every year over the past decade. In 2017, a total of 39.4 tons were seized in the subregion, surpassing the previous record reported in 2015 (34.7 tons). Preliminary data suggest a further marked increase to at least 48 tons in 2018, equivalent to an increase of 22 per cent from the previous year.[126]

The average purity of crystalline methamphetamine in East and South-East Asia continues to remain very high. Thailand, for example, reported that the vast majority (91 per cent) of samples were of a purity exceeding 90 per cent in 2017. The average purity of samples analysed in China reached 89 per cent in 2017 and other countries in the region (Brunei Darussalem, Cambodia, Indonesia, Malaysia and Viet Nam) reported purity levels of between 70 and 80 per cent.[127] While purity remained high, retail prices of crystalline methamphetamine have decreased in several countries in the subregion in recent years, including Cambodia, Indonesia, Japan, Malaysia and Myanmar.[128] This points towards an

122 Ibid.
123 Ibid.
124 Ibid.
125 Ibid.
126 Ibid.
127 Ibid.
128 Ibid., p. 5.

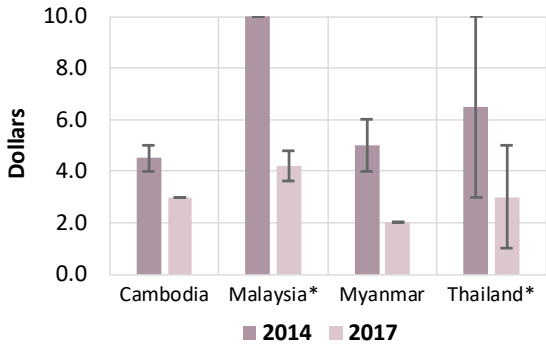
FIG. 38 Quantity of methamphetamine seized in China and South-East Asia, 2013–2018



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

**Data for 2018 are still preliminary; at the time of writing, Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea, and Thailand, all provided drug seizure data for the whole year 2018. China, Indonesia and Singapore provided data up to September 2018, Viet Nam for the first 11 months of 2018, and Japan for the first half of the year 2018.*

FIG. 39 Typical retail price of methamphetamine tablets, selected countries in East and South-East Asia, 2014 and 2017, or latest year available



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

Note: The high-low bars represent the upper and lower limits of the price ranges for the countries reporting such ranges in addition to reporting the typical price.

**Data for Malaysia and Thailand are for 2018.*

increase in the availability of crystalline methamphetamine in the subregion.[129]

However, trends in China regarding methamphetamine supply and trafficking appear to be in contrast to those trends observed in the rest of East and South-East Asia. Data on seizures and prices suggest that the methamphetamine market in China has contracted while the market outside China has expanded. The number of dismantled clandestine laboratories has declined in China in recent years[130] (both for the manufacture of methamphetamine tablets and for crystalline methamphetamine),[131] as have the quantities of methamphetamine seized in China. Moreover, for the first time in years, the proportion of users of synthetic drugs (mostly methamphetamine) among all registered drug users decreased, although only slightly, in 2017 from the previous year.[132] Research conducted in China also found a decline in the quantities of methamphetamine found in wastewater in recent years, which, according to the Chinese authorities, followed campaigns to crack down on the drug's manufacture and use.[133, 134]

Price data also follow diverging trends between China and other countries in South-East Asia in recent years, with several countries in South-East Asia reporting a decrease in methamphetamine prices. In Viet Nam, for example, the wholesale price of crystalline methamphetamine declined by 40 per cent from $13,500 per kg in 2016 to $8,000 per kg in 2017.[135] In China, by contrast, prices showed a more than sevenfold increase, from a typical wholesale price for crystalline methamphetamine of $2,910 per kg in 2015 to $21,800 in 2018.[136]

A number of successful law enforcement operations in the Golden Triangle provided evidence of the large quantities of methamphetamine produced there, in particular in northern Shan State, where six methamphetamine manufacturing facilities were dismantled in Kutkai in early 2018. The large-scale facilities were estimated to have manufactured some

129 Ibid., p. 4.

130 National Narcotics Control Commission of China, Annual Report on Drug Control in China 2018., p. 52.

131 UNODC, *Synthetic Drugs in East and South-East Asia,* p. 27.

132 National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2018*, p. 49.

133 David Cyranoski, "China expands surveillance of sewage to police illegal drug use", *Nature; International Journal of Science*, vol. 559, No. 7714 (July 2018).

134 Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018".

135 UNODC, *Synthetic Drugs in East and South-East Asia*.

136 Ibid.

1.2 million methamphetamine tablets, roughly 260 kg of crystalline methamphetamine, and other substances (mostly ketamine).[137]

This shift from China as the main location of methamphetamine manufacture and trafficking to other countries in East and South-East Asia is also indirectly reflected in trafficking data reported by Australia. China and Hong Kong, China, were the two main embarkation points for methamphetamine trafficked to Australia in 2015, whereas by 2017 Thailand and Malaysia had become the second and third most important embarkation points, after the United States.

Most of the methamphetamine available in East and South-East Asia is sourced in the subregion, with Myanmar and, to a lesser extent, China continuing in 2017 to be the most frequently identified by other countries as the origin of seized methamphetmine. Some methamphetamine is also reported to be sourced outside the subregion, including, in descending order, in Mexico, the United States, the Islamic Republic of Iran and India, although their role in supplying markets in East and South-East Asia remains limited.

While methamphetamine trafficking flows from East and South-East Asia to countries outside the region remain modest, some smuggling was reported, mainly from China and Thailand, over the period 2013–2017. According to seizure information provided by Member States, destinations outside the subregion include other countries in Asia (Bangladesh and Sri Lanka, followed by Saudi Arabia and Israel), countries in Oceania (Australia and New Zealand), countries in the Americas (United States and Canada) and countries in both Western and Eastern Europe.

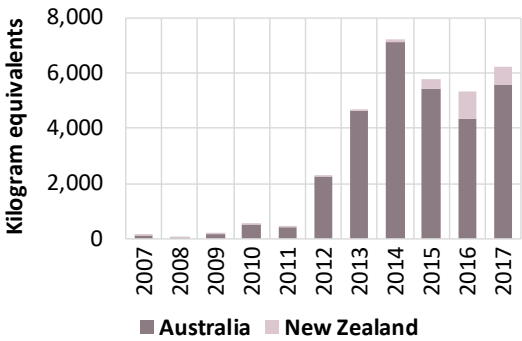
High levels of methamphetamine trafficking into and across Oceania

The quantities of methamphetamine seized in Oceania showed a marked upward trend over the period 2009–2014, followed by a decline over the period 2014–2016 and an increase in 2017. Australia accounted for 93 per cent of all quantities seized in the region over the period 2013–2017 and New Zealand for 7 per cent.

137 Ibid.

In parallel to the marked increase in the quantities of methamphetamine seized, the median purity of methamphetamine samples also rose drastically in Australia, from around 10 per cent in the period 2007–2010 to 60–80 per cent in the period 2014–2015 and has remained at such a level since then.[138]

FIG. 40 Quantity of methamphetamine seized in Oceania, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

The analysis of the synthetic route of manufacture of samples taken from seizures effected at the border of Australia revealed that in each year since 2012 most of the methamphetamine smuggled into Australia was manufactured from either ephedrine or pseudoephedrine (82 per cent in 2016) and only a small proportion (7 per cent in 2016) was produced from P-2-P. Over the first two quarters of 2017, however, the proportion of samples manufactured from ephedrine or pseudoephedrine declined to 53 per cent, while the proportion of methamphetamine manufactured from P-2-P increased to 33 per cent.[139] This may indicate the increasing importance of methamphetamine trafficked to Australia from North America over the first two quarters of 2017. Based on the analysis of the methods used for the manufacture of amphetamines (i.e., mostly methamphetamine) in Australia, the P-2-P method was found in just 19 clandestine laboratories dismantled in Australia in the fiscal year 2016/17, or 8 per cent of all dismantled amphetamines laboratories, for which the production method used could be identified (of which a few may have also produced

138 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*.

139 Ibid.

amphetamine), while most laboratories dismantled in Australia still relied on ephedrine or pseudoephedrine for manufacturing methamphetamine.[140]

Nonetheless, there is still significant domestic clandestine manufacture of methamphetamine in Oceania. New Zealand reported the dismantling of, on average, 61 methamphetamine laboratories per year over the period 2013–2017, with a fluctuating, upward trend (45 in 2015, 745 in 2016 and 79 in 2017). Australia, by contrast, reported a downward trend in the detection of clandestine laboratories manufacturing amphetamines (including methamphetamine), from a peak of 809 in the fiscal year 2011/12 to 463 in 2016/17,[141] while the number of dismantlements of clandestine laboratories used exclusively for illicit manufacture of methamphetamine fell from 270 in 2012/13 to 206 in 2016/17.

Most methamphetamine reaching Australia continues to be sourced in Asia, but there are also signs of new sources of methamphetamine in Africa. In 2017 methamphetamine was smuggled into Australia from both East Asia (most notably China; Hong Kong, China; and Taiwan Province of China) and South-East Asia (notably Malaysia, Cambodia and Viet Nam), while South Africa also appeared as a key embarkation point for the first time ever.[142] Of note is that authorities of South Africa reported the smuggling of methamphetamine from Nigeria and Mozambique into South Africa and clandestine manufacture of methamphetamine in the country, for both the domestic market and international markets, in 2017.

In 2017, Canada and, to a lesser extent, the United States were reported for the first time ever as being main departure countries for methamphetamine found in New Zealand, followed by Hong Kong, China; China; and Mexico. For Australia, the United States was the primary embarkation point for amphetamines trafficked during the fiscal year 2016/17, while Canada was the fifth most important.[143] That situation may be due to the high price of methamphetamine in Oceania, which in 2017 amounted, on average, to $456 (United States dollars) per gram (range $152–$761) in Australia and $354 per gram (range $212–$992) in New Zealand. This compared with a price of some $70 (range: $23–$115) per gram in Canada and around $75[144] per gram in the United States (range: $10–$400), thus making the smuggling of methamphetamine from countries in North America highly lucrative.

Market size and seizures of methamphetamine in Australia

Wastewater analysis has been used in Australia to estimate annual amounts of methamphetamine consumed in the country: 8.4 tons in the fiscal year 2016/17.[a] Reported quantities of methamphetamine seized amounted to 5.6 tons in Australia in 2017, while average purity in the fiscal year 2016/17 was reported at 77 per cent: purity-adjusted seizures may have thus amounted to 4.3 tons. Excluding from the calculation potential losses incurred that would not be included in seizures, some 12.7 tons (8.4 tons plus 4.3 tons) of methamphetamine either entered the country and/or were manufactured domestically, of which 4.3 tons, or 34 per cent of the total, appear to have been seized in 2017. Such a high seizure rate may explain the high price of methamphetamine in Australia.

[a] Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17.*

Methamphetamine seizures in Europe remain modest despite increases in 2017

The quantity of methamphetamine intercepted in Europe is comparatively limited. The region accounted for around 1 per cent of the global quantity seized in the period 2013–2017, with Western

140 Ibid.

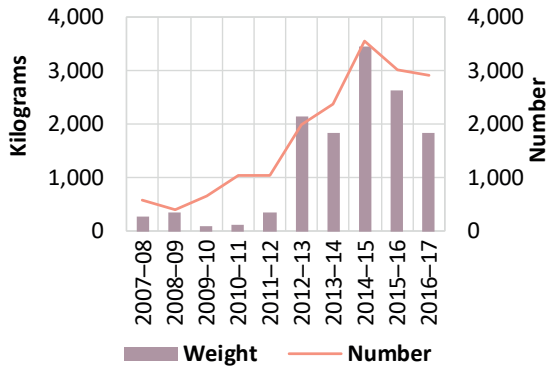
141 Ibid.

142 Ibid.

143 Ibid.

144 Based on a purity adjusted price of $70 and a purity level of 93.2 per cent over the period January-March 2017 as reported by DEA in *2018 National Drug Threat Assessment*, p. 61.

FIG. 41 Number of seizures and quantity of amphetamines (mainly methamphetamine) seized at the Australian border, 2007-2017



Source: Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*, p. 24.

and Central Europe accounting for just over half of the quantity, South-Eastern Europe accounting for a quarter, and Eastern Europe for a fifth. However, the situation changed in 2017, when quantities of methamphetamine seized increased dramatically in both Eastern and South-Eastern Europe, taking methamphetamine seizures in Europe to a record high of 2.6 tons that year – a threefold increase from 2016.

That increase was the result of record quantities being intercepted in both the Russian Federation and Turkey, which clearly exceeded seizures reported by France, Germany and Czechia, the three countries that reported the largest quantities of methamphetamine seized in Western and Central Europe in 2017. Czechia, the country that probably faced the most serious methamphetamine problem in Europe over the past two decades (based on the number of clandestine methamphetamine laboratories identified, and on indicators of methamphetamine demand and related deaths), reported a sharp increase in the quantity of methamphetamine seized up until 2015, followed by a decline thereafter – a trend that is also reflected in the overall amounts of methamphetamine found in wastewater in European cities in recent years.[145]

145 Based on information from SCORE.

When considering a longer time period, there may also have been a geographical expansion of methamphetamine trafficking across Europe, as suggested by the number of countries reporting seizures of the drug, which increased from 12 countries reporting seizures in 2000 to 31 countries in 2017.

Methamphetamine trafficked in Europe appears to originate mainly within the region, in particular in Czechia (28 per cent of all mentions of origin of seizures in the period 2013–2017), followed by Lithuania (12 per cent). Czechia also reported the largest number of methamphetamine laboratories dismantled over the period 2013–2017: 1,321, or 89 per cent of all dismantled methamphetamine laboratories reported in Europe in that period. Although to a lesser extent, the methamphetamine found on the European market may also be sourced outside the region (16 per cent in total), mainly in South-East Asia (mostly Thailand, China and Viet Nam), followed by South-West Asia (Islamic Republic of Iran) and Africa. European airports are used solely as transit locations for shipments to final destinations in East and South-East Asia (including Malaysia, Indonesia, Japan and the Republic of Korea).

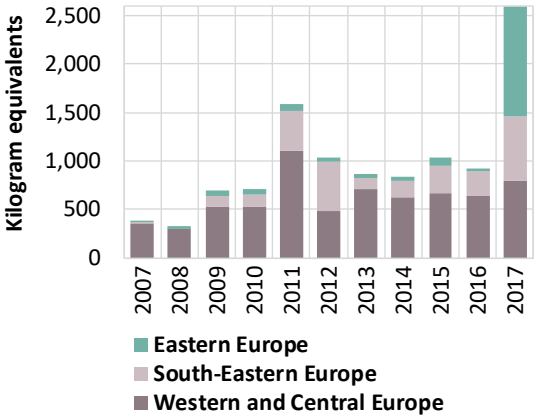
Methamphetamine seized in the Russian Federation, the European country reporting the largest quantities of methamphetamine seized in 2017, is reported to have been smuggled into the country in the period 2013–2017, mainly from countries in the European Union (including Czechia, Slovakia and the Baltic States), followed by China and the Islamic Republic of Iran and, to a far lesser extent, Belarus and the Ukraine.

Most of the methamphetamine seized in countries in South-Eastern Europe appears to have been produced and trafficked within the subregion itself, with countries in South-Eastern Europe accounting for 75 per cent of all mentions of countries of origin, departure and transit over the period 2013–2017.

Amphetamine manufacture remains concentrated in Europe

Overall, 22 countries reported the dismantling of 790 clandestine amphetamine laboratories over the period 2013–2017, while 37 countries were reported as countries of origin of amphetamine seized over that period, suggesting that, as is the case with

FIG. 42 Quantity of methamphetamine seized in Europe, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

methamphetamine, the illegal manufacture of amphetamine may be more geographically widespread than what the location of dismantled clandestine laboratories suggests.

In addition, a few countries reported the diversion of amphetamine from licit sources to illicit channels, including the United States, Brazil and Canada in the Americas, and Slovakia and Belgium in Europe.

More than half the total number of amphetamine laboratories reported dismantled worldwide in the period 2013–2017 were in just 17 European countries, mainly in Western and Central Europe. The Netherlands reported the largest number of amphetamine laboratories dismantled and, with Poland and Belgium, was among the countries of origin of amphetamine that were most reported by other countries worldwide, while amphetamine from South-Eastern Europe was reported as being mainly sourced from Bulgaria and Turkey.

An additional quarter of the total number of clandestine amphetamine laboratories reported worldwide were dismantled in North America over the period 2013–2017, mostly in the United States, followed by Guatemala, where the drug is mainly produced for the United States market.

While a number of clandestine amphetamine laboratories were reported to have been dismantled in Oceania, accounting for a fifth of the global total, methamphetamine manufacturing seems to have been predominant in that subregion over the period 2013–2017. In both Australia and New Zealand, significant amounts of ephedrine and pseudoephedrine were seized; both are substances used in the manufacture of methamphetamine, not of amphetamine. By contrast, only small amounts of amphetamine precursors, P-2-P and phenylacetic acid were seized in the Oceania.

In Asia, only India and Myanmar reported the detection of a few amphetamine laboratories to UNODC over the period 2013–2017. While ATS precursor seizures in both countries mainly were of ephedrine and pseudoephedrine, smaller quantities of P-2-P and phenylacetic acid were also seized, providing indirect evidence that some amphetamine manufacture may also have taken place there, in addition to the probably more significant manufacture of methamphetamine.

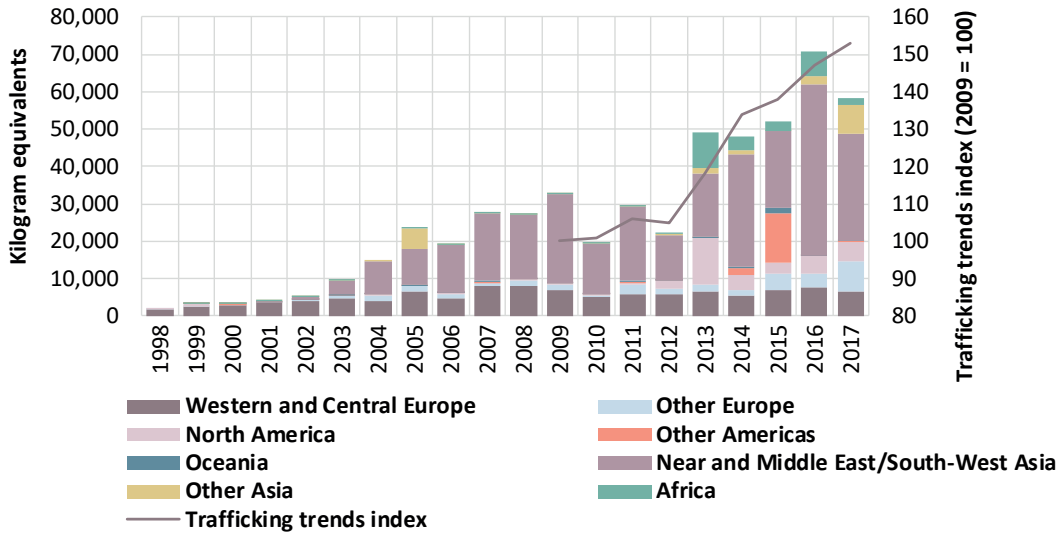
The production of "captagon" tablets, i.e., amphetamine tablets mixed with caffeine, in the Near and Middle East is possibly more important in Asia than the manufacture of amphetamine in South and South-East Asia. Indications received from other countries in the region, as well as media reports, suggest the existence of clandestine laboratories manufacturing "captagon" tablets, in particular in the Syrian Arab Republic and Lebanon, partly for domestic consumption and partly for the more lucrative markets of Saudi Arabia and a number of other Gulf States. In addition, another two countries in the Near and Middle East/South-West Asia – in descending order, Jordan and the Islamic Republic of Iran – have been identified by other countries in those subregions as possible countries of origin of amphetamine shipments.

The fact that no amphetamine laboratories were dismantled in Africa in the period 2013–2017 suggests there is an absence of manufacture of the substance in the region and/or a limited capacity to detect such manufacture.

Amphetamine trafficking has been increasing over time

The quantities of amphetamine seized increased markedly over the period 1998–2007 and, despite some fluctuations, continued to rise rapidly, reaching a peak in 2016. The global increase in quantities

FIG. 43 Quantity of amphetamine seized, 1998–2017, and amphetamine trafficking trends index (2009 = 100)



Source: UNODC, responses to the annual report questionnaire.

of amphetamine seized over the past two decades has mainly been driven by increases in seizures reported in Asia, most notably by countries in the Near and Middle East/South-West Asia.

Quantities of amphetamine seized in Europe have also increased, most notably the quantities reported in South-Eastern and Eastern Europe, which, in 2017, exceeded those reported by countries in Western and Central Europe for the first time. In European Union countries, it is likely that amphetamine availability has increased slightly over the past decade, as suggested by a slight decline in the price of the drug and a slight increase in its purity over that period.[146]

Quantities of amphetamine seized in the Americas increased sharply over the past decade, in particular in North America, although seizures in the Americas in 2017 were still below the peak of reported quantities in 2015, which was mainly linked to large quantities intercepted in Guatemala, and quantities seized in North America were still below the peak reported in 2013.

Likewise, quantities of amphetamine seized in Africa turned out to be substantially higher in 2017 than a decade earlier, but they were clearly below the peak reported in 2013, which was due to the large amphetamine seizures reported by Burkina Faso. The largest quantities of amphetamine seized in the period 2013–2017 in Africa were reported by Egypt, followed by Burkina Faso and the Sudan.

Although global quantities of amphetamine seized declined by 18 per cent between 2016 and 2017, there are no indications of a general decline in amphetamine trafficking: while amphetamine seizures fell in the Near and Middle East/South-West Asia, in South Asia and in Africa (notably in North Africa) in 2017, increases were reported in Europe, the Americas and Oceania. Moreover, qualitative information reported by Member States suggest continuous growth in amphetamine trafficking in 2017.

Most amphetamine trafficking remains concentrated in the Near and Middle East and in Europe

In the period 2013–2017, 56 per cent of the global quantity of amphetamine seized was reported in Asia – of which 51 per cent was accounted for by countries in the Near and Middle East/South-West Asia; 19 per cent by countries in Europe, including 12 per cent by countries in Western and Central

146 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2018).

Europe; 16 per cent in the Americas, including 11 per cent by countries in North America; 9 per cent by countries in Africa; and 1 per cent by countries in Oceania.

Both Europe and the Near and Middle East/South-West Asia continued to report substantially higher seizures of amphetamine than of methamphetamine, suggesting that the availability of amphetamine is still significantly greater than of methamphetamine in those regions and subregions.[147, 148]

Sizeable markets for amphetamines (mostly amphetamine) have existed in many European countries since the 1970s[149] and in the Near and Middle East/South-West Asia since the 1980s, although significant quantities of amphetamines have been seized in the latter subregion only since the beginning of the new millennium.

Saudi Arabia is the country that seized the largest quantities of amphetamine at the global level, accounting for a quarter of the quantity seized worldwide in the period 2013–2017, followed by the United States (10 per cent), Jordan (8 per cent), Turkey, Guatemala, Lebanon and the United Arab Emirates (5 per cent each).

Similar to the case with methamphetamine, most amphetamine trafficking continues to be mainly intraregional. European countries, for example, reported that most (93 per cent of all mentions in the 2013–2017 period) of the amphetamine trafficked on their territory originated in the region.[150] Amphetamine destined for the European market was most frequently reported as being sourced in the Netherlands (37 per cent of all mentions), followed by Poland (19 per cent), Lithuania (10 per cent), Belgium (9 per cent), the Russian Federation (3 per cent) and Bulgaria (3 per cent). In addition, some of the amphetamine illicitly manufactured in Europe is also destined for export, mainly to countries in the Middle East (including "captagon" tablets) and, to a lesser extent, to countries in the Far East and Oceania.[151]

147 *Report of the International Narcotics Control Board for 2018* (E/INCB/2018/1), para 780.

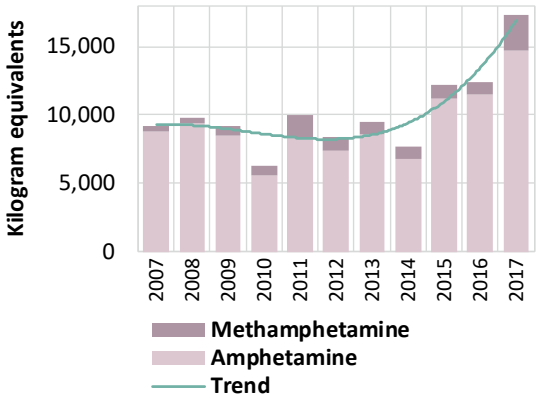
148 EMCDDA, *European Drug Report 2018*.

149 Ibid.

150 Ibid.

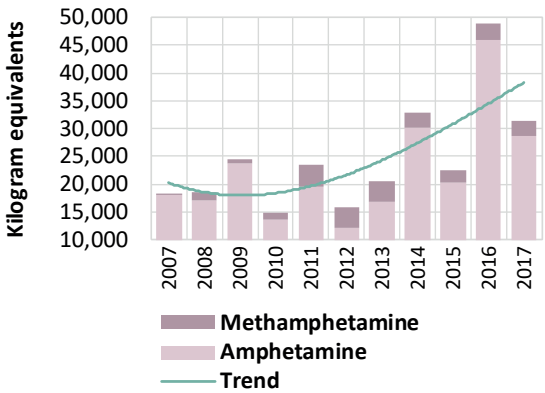
151 Ibid.

FIG. 44 Quantities of amphetamine and methamphetamine seized in Europe, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 45 Quantities of amphetamine and methamphetamine seized in the Near and Middle East/South-West Asia, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

The most frequently reported countries of origin of amphetamine (mainly "captagon") in the Near and Middle East/South-West Asia over the period 2013–2017 were the Syrian Arab Republic and Lebanon, which together accounted for more than half of all mentions of countries of origin made by country authorities in those subregions, in contrast to the situation in the period 2010–2012 when the main country of origin reported was Turkey. From around 1990 to the mid-2000s, amphetamine manufactured in the Balkan countries, most notably Bulgaria, was

"Captagon" tablets in the Near and Middle East

Instability and conflict in the Middle East appear to be continuing to contribute to trafficking in falsified "captagon" in the subregion.[a] Moreover, a lack of control and monitoring has led to an increase in the manufacture of "captagon" tablets in some countries, which is a potential source of income for terrorist and insurgency groups in the subregion.[b] Tablets with a "captagon" logo (originally the brand name of a medicinal product) used to contain fenetylline until the substance came under international control in 1986. While the diversion of fenetylline from existing stocks might still have occurred thereafter until the end of the 1990s, those stocks, some of which were apparently located in Bulgaria, became increasingly depleted. While the brand name and logo continued to be used, increasingly, "captagon" tablets began to contain amphetamine, often mixed with caffeine and other substances. An analysis of seizures made in Lebanon in 2013, for example, revealed that such tablets contained 8–14 per cent amphetamine, 12–35 per cent caffeine, 10–14 per cent theophylline and 6–20 per cent paracetamol.[c] Data generated in the context of Operation Missing Link, covering countries in the Middle East and North Africa, led by INCB between April 2016 and January 2017,[d] confirmed the mixed content of "captagon" tablets; they revealed combinations of amphetamine with caffeine, theophylline, quinine and paracetamol as the main active ingredients in tablets analysed in 65 seizures made in Jordan, Lebanon and the United Arab Emirates.[e] Amphetamine tablets seized in Turkey in 2017 were reported to contain between 2 and 99 mg of amphetamine, the upper range being far higher than in previous years (in 2016, a typical dose was 15 mg; range 4–28 mg; in 2014, a typical dose was 4 mg; range: 1–9 mg), or in the amounts of amphetamine previously found by the United States authorities in "captagon" tablets seized in Iraq in 2009 (7-20 mg).[f]

While Operation Missing Link led to the seizure of a number of pre-precursors of amphetamines, including P-2-P methyl glycid acid derivatives,[g] data collected during the operation revealed that the vast majority of the amphetamine found in "captagon" tablets (82 per cent) in the Middle East had been manufactured out of APAAN,[h, i] another pre-precursor of amphetamine (precursor of P-2-P), which came under international control in October 2014.[j]

It is possible that this international targeting of "captagon" in 2016 and its main precursor chemicals in the Middle East and North Africa contributed to the marked increase in the quantities of amphetamine seized in the Near and Middle East/South-West Asia in 2016 from the previous year (more than doubling, from 20 tons to 46 tons) and in North Africa (more than doubling, from 2.4 tons to 6.6 tons), and also led to the subsequent decline in 2017 (respectively, to 29 tons and to 1.7 tons).

a E/INCB/2018/1.

b Ibid.

c EMCDDA, *Captagon: Understanding Today's Illicit Market*.

d E/INCB/2017/1.

e EMCDDA, *Captagon: Understanding Today's Illicit Market*.

f DEA, "Captagon mimic tablets (containing *d,l*-amphetamine, caffeine, theophylline, and other components) in Al Anbar Province, Iraq", *Microgram Bulletin,* vol. 42, No. 3 (March 2009), pp. 28–29.

g *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2017 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2017/4)

h Ibid.

i EMCDDA, *Captagon: Understanding Today's Illicit Market*.

j Commission on Narcotic Drugs decision 57/1.

the main source of the falsified "captagon" tablets sold in the Arabian Peninsula by Bulgarian and Turkish criminal networks.[152] Later, amphetamine was also synthesized in Turkey.[153] By the mid-2000s, law enforcement operations in Bulgaria and Turkey appear to have reduced illicit manufacture of "captagon" in the two countries. However, from 2011 onwards, the conflict in the Syrian Arab Republic appears to have had an impact as various factions that were seeking access to funds through involvement in the illicit drug trade had an incentive to become active in the production of "captagon".[154]

Initially, some of the amphetamine manufactured in the region might have been produced from the very large quantities (98 tons) of P-2-P imported licitly into Jordan over the period 2008–2011, mostly for re-export to Iraq, which represented more than two thirds of the global trade in P-2-P in that period and was sufficient to produce 55–65 tons of amphetamine.[155] Subsequently, "captagon" tablets seem to have been manufactured from precursor chemicals smuggled from Europe via seaports into the Syrian Arab Republic. Some of these "captagon" tablets were then also smuggled into Turkey for onward trafficking to various countries in the Near and Middle East, or via Lebanon to other countries on the Arabian Peninsula. Turkey reported that it continued to be used as a transit country for trafficking in "captagon" sourced in the Middle East, particularly in the Syrian Arab Republic, including by terrorist and insurgency groups operating there.[156] Moreover, some 599 bags of "captagon" were seized by law enforcement officers in the Basra region of Iraq, near the Kuwaiti border, in November 2017.[157]

Large trafficking from Jordan to Saudi Arabia is also documented. There is some evidence that manufacture of "captagon" tablets has taken place in Jordan. In two separate incidents, in January and March 2018, customs authorities of Saudi Arabia foiled attempts to smuggle "captagon" tablets into the country. A total of about 6.3 million tablets of the substance were recovered during those operations at the border with Jordan in 2017. While some of these tablets may have originated in neighbouring countries, Jordan, for the first time, also dismantled a clandestine laboratory manufacturing "captagon", mainly destined for markets in Saudi Arabia and neighbouring countries.[158]

Large law enforcement operations also document trafficking between the Syrian Arab Republic and Lebanon and Gulf countries. In 2017, the United Arab Emirates seized 45 million tablets of "captagon".[159] Most of the trafficking of "captagon" seems to be have been from Lebanon and the Syrian Arab Republic to other countries in the Near and Middle East, using both direct and indirect routes. In a few cases, Europe has also been used for the transit of "captagon" for onward trafficking to Saudi Arabia. In one case, customs officials of France reported the interception of 350,000 "captagon" tablets at Charles de Gaulle airport, Paris, in January and February 2017; the drug, hidden in industrial moulds exported from Lebanon, was intended for shipment to Czechia and onward trafficking via Turkey to Saudi Arabia.[160]

In addition to the large-scale manufacture of "captagon" tablets in the Near and Middle East, there have also been reports of some manufacture in Europe, including in Belgium and Greece, in the period 2013–2017, destined for the Near and Middle East, often via Turkey. Of greater significance is the emerging cooperation between local organized crime groups in Lebanon and organized crime groups in Europe that are involved in synthetic drug manufacture. The dismantling of one such "captagon" production site in Lebanon, in December 2015, revealed that the custom-made reaction vessels and other equipment found there were very similar to those found in Belgium and the Netherlands.

152 EMCDDA, *Captagon: Understanding Today's Illicit Market*.

153 *World Drug Report 2008* (United Nations publications, Sales No. E.08.XI.1).

154 EMCDDA, *Captagon*: *Understanding Today's Illicit Market*.

155 Ibid.

156 E/INCB/2017/4.

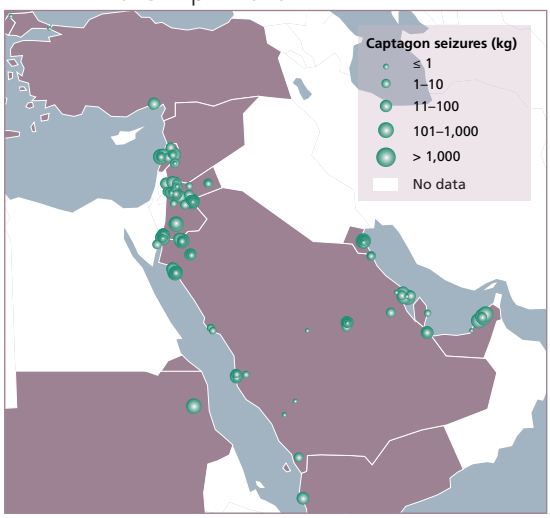
157 Ibid.

158 Ibid.

159 Ibid.

160 France, Ministère de l'Action et de Comptes Publics, Douane et Droits Indirect, "Premières saisies de captagon en France: 750 000 comprimés à Roissy", 30 Mai 2017; Customs Today, "Captagon seizes for first time in France", 30 May 2017; Radio France International, "Customs seize 135 kg of captagon for first time in France", 30 May 2017.

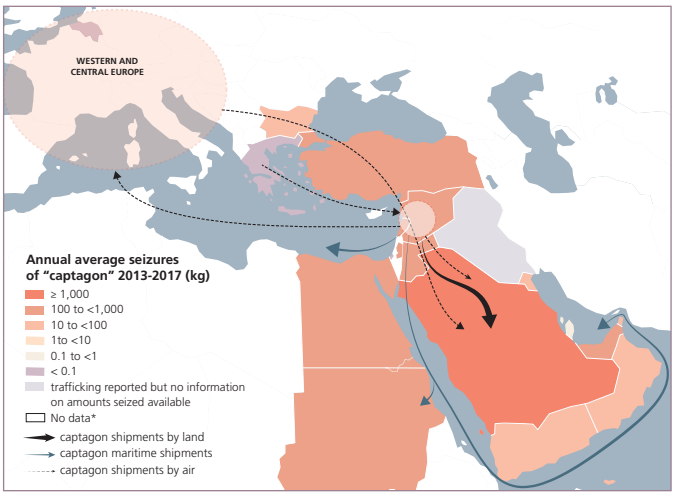
MAP 4 Reported significant individual drug seizures of "captagon" tablets, January 2013–April 2019



Source: UNODC and Paris Pact, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

MAP 5 Reported seizures and trafficking routes of "captagon" tablets, 2013–2017



Sources: UNODC, annual report questionnaire data; International Narcotics Control Board (INCB); Heads of National Law Enforcement (HONLEA) reports; Bureau of International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Reports*; EMCDDA, *Captagon: understanding today's illicit market,* EMCDDA Papers, October 2018; Republique Française, Ministère de L'Action et des Comptes Publics, Douane et Droits Indirect, *Premières saisies de captagon en France - 750 000 comprimés à Roissy*, 30 Mai 2017.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

** Boundaries are not displayed for adjacent countries or territories with no available data.*

According to seizure information, the main destination market for amphetamine smuggled to the Near and Middle East over the period 2013–2017 was Saudi Arabia, followed by the Gulf countries (most notably the United Arab Emirates, followed by Qatar, Kuwait and Bahrain). Other countries mentioned as destination countries include Egypt, Iran (Islamic Republic of) and the Sudan.

"Ecstasy" manufacture concentrated in Europe, although it may be spreading to other regions

A total of 19 countries reported the dismantling of 367 "ecstasy" laboratories in the period 2013–2017, and 35 countries were identified as countries of origin of seized quantities of the drug. "Ecstasy" continues to be manufactured primarily in Europe, most notably in Western and Central Europe, although the share of countries in that subregion mentioned as "country of origin" of "ecstasy" has declined slightly over the past two decades. Europe accounted for two thirds of the "ecstasy" laboratories dismantled worldwide in the period 2013–2017, followed by the Americas (14 per cent of the global total), Asia (12 per cent) and Oceania (7 per cent), whereas no "ecstasy" laboratories have been detected and dismantled to date in Africa.

Both the number of "ecstasy" laboratories dismantled and reports of countries of origin of the drug point to the Netherlands and Belgium as the main manufacturing countries of "ecstasy", both in Europe and worldwide, in the period 2013–2017, while a large number of laboratories were also dismantled by the Russian Federation.

The largest number of dismantled "ecstasy" laboratories in the Americas was reported by the United States, followed by Canada and Brazil over the period 2013–2017, while, in Asia, the largest number was reported by Malaysia, followed by Indonesia and Viet Nam. In Oceania, only Australia and New Zealand reported the dismantling of "ecstasy" laboratories.

Three indicators – the number of reported dismantled "ecstasy" laboratories, the trends in the manufacture of "ecstasy" on the basis of qualitative information and the quantities of "ecstasy" seized – all showed an upward trend over the period 2010–2017, suggesting that the overall supply of "ecstasy"

increased during the period. Several countries reported levels of MDMA content in "ecstasy" tablets (over 100 mg of MDMA per tablet) that were higher than a decade ago, which also points to a likely increase in the availability of "ecstasy".

This upward trend in the global supply of "ecstasy" over the period 2010–2017 follows a downward trend in the second half of the first decade of the new millennium, which had been prompted by a shortage of traditional "ecstasy" precursor chemicals on the market (notably 3,4-MDP-2-P), mainly due to improved precursor control at the global level and in China in particular.[161]

The recent increase in the supply of "ecstasy" is probably the result of the identification of a number of new pre-precursors used in the manufacture of the drug. Those chemicals include a number of 3,4-MDP-2-P substitutes, such as helional, as well as "designer precursors" such as the various 3,4-MDP-2-P methyl glycid acid derivatives, all of which are chemicals without legitimate uses that appear to have been developed exclusively for use in the clandestine manufacture of "ecstasy" in order to evade existing international controls.[162] It should be noted that 3,4-MDP-2-P methyl glycidate, known for its misuse in the clandestine manufacture of "ecstasy" since 2010,[163] came under international control in 2019.

"Ecstasy" trafficking on the increase again

Trafficking in "ecstasy" at the global level, as reflected in seizures, appears to have expanded over the period 1998–2007, largely in parallel with increasing demand for the drug, while it declined over the period 2007–2011, a consequence of a shortage of "ecstasy" precursors on the market (mainly due to improved controls on 3,4-MDP-2-P by China).[164, 165] Since 2011, "ecstasy" trafficking has increased again, in particular since 2013, as the operators of clandestine MDMA laboratories switched to manufacturing "ecstasy" from non-controlled pre-precursors.[166, 167] Likewise, qualitative information as reported by Member States points to a decline in the trafficking of "ecstasy" over the period 2009–2011 before it increased again over the period 2011–2017.

Very sharp increases in the quantities of "ecstasy" seized over the period 2013–2017 were reported from subregions that had previously reported only limited amounts of "ecstasy" seized. This was the case in Africa, where "ecstasy" seizures increased 60-fold over that period, the Near and Middle-East/South-West Asia (40-fold) and Central Asia and Transcaucasia (31-fold). Marked increases were also reported in Oceania (a ninefold increase), South America (a fivefold increase), East and South-East Asia (a fourfold increase) and Europe (a threefold increase), most notably Western and Central Europe (a fourfold increase).

The marked increase in the quantity of "ecstasy" seized in Europe, from 2.2 tons in 2013 to 6.4 tons in 2017, went hand in hand with signs of ongoing expansion of the "ecstasy market", including increasing use of "ecstasy" pre-precursors in the manufacture of the drug in the region, a decline in "ecstasy" prices and a very sharp increase in the MDMA content of "ecstasy" tablets since the low in 2009. The average MDMA content of tablets more than doubled over the period 2006–2016 in the countries of the European Union,[168] with some very large amounts of MDMA found in some batches of the drug, resulting in increased harm and even deaths linked to the use "ecstasy".[169] The analyses of MDMA in wastewater also found clear evidence of an increase in the amount of "ecstasy" consumed in Europe over the period 2011–2018.[170]

161 *World Drug Report 2014* (United Nations publication, Sales No. E.14.XI.7), p. 83; and *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2013 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2013/4).

162 E/INCB/2018/4.

163 Note by the Secretariat on changes in the scope of control substances under the United Nations Convention against Illicit traffic in Narcotic Drugs and Psychotropic Substance of 1988 (E/CN.7/2019/9).

164 UNODC, *Global Smart Update 2012*, vol. 7 (March 2012).

165 *World Drug Report 2014*; and E/INCB/2013/4.

166 UNODC, Global Smart Update 2012, Volume 7, March 2012.

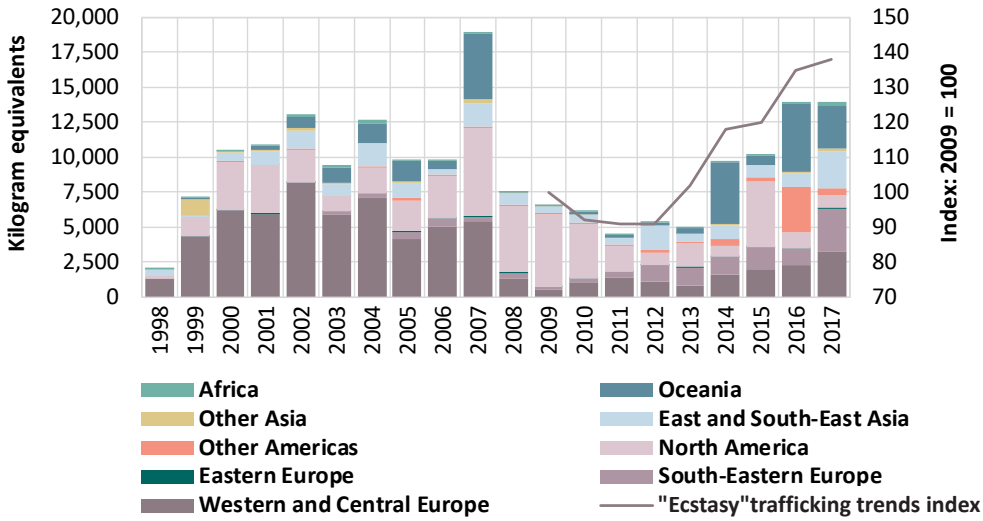
167 E/INCB/2017/4.

168 EMCDDA, *European Drug Report 2018*, p. 30.

169 Ibid., p. 31.

170 EMCDDA, "Wastewater analysis and drugs: a European

FIG. 46 Quantity of "ecstasy" seized, by region, 1998-2017 and "ecstasy" trafficking trends index (2009 = 100)



Source: UNODC, responses to the annual report questionnaire.

The largest quantity of "ecstasy" seized worldwide over the period 2013–2017 continued to be reported in Europe, which accounted for more than one third of global quantities intercepted, while the Americas (most notably North America) and Oceania accounted for one fifth each, and Asia (mostly East and South-East Asia) accounted for 12 per cent. However, the greater expansion of the "ecstasy" market in other regions has led to a decline in the overall importance of Europe, in particular of Western and Central Europe, in global "ecstasy" trafficking as suggested by seizures. This reflects a trend towards the increasing globalization of trafficking in "ecstasy" and the emergence of "ecstasy" manufacturing sites in a number of countries across all regions.

In contrast to other ATS, "ecstasy" is not only trafficked at the intraregional level but also between regions. The Netherlands and Belgium remain the most frequently mentioned source countries of "ecstasy" worldwide, accounting for 42 and 16 per cent, respectively, of all mentions of origin over the period 2013–2017. A number of other European countries, mostly in Western and Central Europe, including, in descending order, Germany, Spain, the United Kingdom, France and Poland, are also frequently mentioned as source or transit locations for "ecstasy" found in markets in the region and beyond.

"Ecstasy" manufacture in the other regions seems to be almost exclusively for use within the region where it was manufactured. In Oceania, however, in addition to "ecstasy" being smuggled from Europe (most notably Germany, the Netherlands and the United Kingdom), Australia reported in the fiscal year 2016/17 "embarkation points" in North America (Canada and the United States), [171] and in the fiscal year 2014/15, "embarkation points" in Asia (notably China, including Hong Kong, China; the United Arab Emirates; and Singapore).[172]

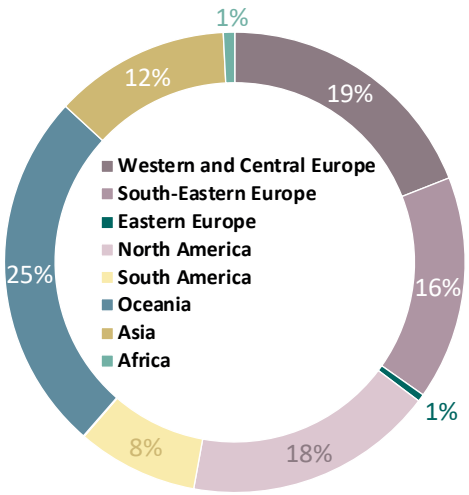
Seizures of "ecstasy" in Asia have markedly increased in recent years, from 0.6 tons in 2013 to 2.9 tons in 2017, 96 per cent of which was reported by countries in East and South-East Asia over the period 2013–2017. In 2017, a total of approximately 9 million "ecstasy" tablets were seized in East and South-East Asia, representing a significant increase

multi-city study", Perspectives on Drugs Series (Lisbon, March 2019).

171 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*.

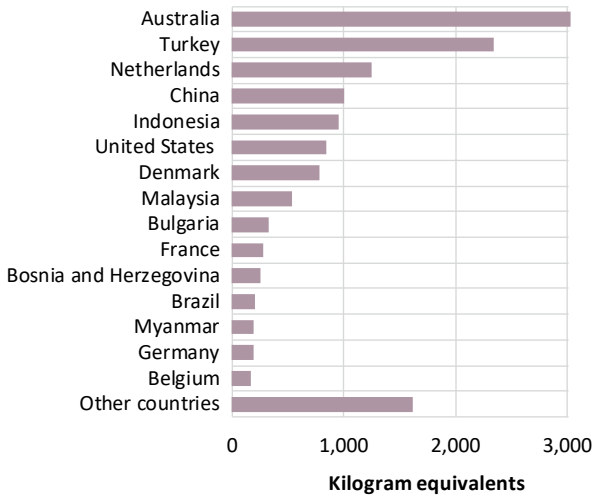
172 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2014-15* (Canberra, 2016).

FIG. 47 Regional distribution of the quantity of "ecstasy" seized, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 48 Quantity of "ecstasy" seized, by main seizing countries, 2017



Source: UNODC, responses to the annual report questionnaire.

from the three preceding years when around 3 million tablets were seized annually.[173]

The manufacture of "ecstasy", as evidenced by dismantled laboratories, was reported by China, Malaysia, Viet Nam,[174] as well as by Indonesia, Thailand[175] and Myanmar[176] in the period 2013–2017. In addition, a clandestine "ecstasy" laboratory was dismantled in the Philippines in 2018.[177] Similar to reports from other subregions, there have also been noticeable increases in the average MDMA content of "ecstasy" tablets found in East and South-East Asia in recent years. In addition to "ecstasy" tablets, crystalline MDMA, generally considered to be purer than "ecstasy" tablets, has become available in that subregion in recent years.[178] The largest seizures of "ecstasy" tablets in East and South-East Asia in the period 2013–2017 were reported by Indonesia (41 per cent of the total in the subregion), followed by China (28 per cent) and Malaysia (15 per cent).[179] A large seizure in 2018 concerned a shipment of 1.2 million "ecstasy" tablets from the Netherlands, seized in Indonesia in August 2018.[180]

In contrast to the thriving "ecstasy" markets in most of the regions, quantities of "ecstasy" seized in recent years in North America have decreased by a factor of five in the last two years, from 4.7 tons in 2015 to less than 0.9 tons in 2017. The long-established trafficking pattern of Asian organized crime groups being involved in the manufacture of "ecstasy" in Canada (from precursor chemicals smuggled into Canada from East Asia) and the subsequent smuggling of "ecstasy" tablets from Canada into the United States appears to be continuing, however.[181] The Canadian authorities estimated that a total of 63 organized crime groups were involved in the country's "ecstasy" market and in the smuggling of "ecstasy" precursor chemicals into Canada in 2017. However, such crime groups, which are mostly located in British Columbia and Ontario, have decreased in number since 2016, when there were an estimated 78 such groups; the increasing difficulty in accessing precursor chemicals might have played a role in the decrease.

173 UNODC, *Synthetic Drugs in East and South-East Asia,* p. 12.
174 Ibid.
175 UNODC, responses to the annual report questionnaire.
176 UNODC, *Synthetic Drugs in East and South-East Asia*.
177 Ibid.
178 Ibid.
179 Ibid.
180 Ibid.
181 DEA, *2018 National Drug Threat Assessment.*

While operators of clandestine laboratories in Europe were successful in overcoming the shortage of the key "ecstasy" precursor 3,4-MDP-2-P, after 2011, by using pre-precursors, no such shift has been reported in North America.[182] Thus, "ecstasy" seems to have continued to be manufactured in North America with traditional precursors, although perhaps at a lower level of output, while imports, in particular from Europe, appear to have increased.

In addition to domestic manufacture of MDMA (with nine "ecstasy" laboratories dismantled in 2017) in the United States and ongoing smuggling of "ecstasy" into the country from Canada, significant trafficking in "ecstasy" from Europe, most notably from the Netherlands and via Germany, was also reported in 2017. The bulk of the "ecstasy" found on the United States market is estimated to be for domestic use (81 per cent in 2017), but some of the "ecstasy" seized in 2017 was found to have been intended for onward trafficking, mostly to Argentina (16 per cent) and Mexico (1 per cent). Data also show that clandestine manufacture of "ecstasy" takes place in Latin America, including in Argentina, Brazil, Colombia and the Dominican Republic, as reflected in reports of dismantled "ecstasy" laboratories over the period 2013–2017. Possibly linked to the growing importance of sales of "ecstasy" on the darknet,[183] shipments by mail accounted for 55 per cent of all the intercepted quantities of "ecstasy" in the United States in 2017. By contrast, trafficking of "ecstasy" from the United States to markets abroad was mainly by sea (94 per cent).

Demand for amphetamine-type stimulants

Use of amphetamines

It is estimated that in 2017, roughly 0.6 per cent of the global population aged 15–64, or 29 million people, had used amphetamines (amphetamine and methamphetamine) in the past year. The highest past-year prevalence of use of amphetamines worldwide was estimated to be in North America (2.1 per cent), followed by Australia and New Zealand (1.3 per cent). The prevalence of use of amphetamines, especially methamphetamine, is also reported to be high in East and South-East Asia; however, owing to insufficient data in the subregion, it is difficult to estimate the actual extent of their use. Qualitative information in many countries in the subregion, however, continues to point to an increase in the use of amphetamines. From the limited quantitative information available, it can be estimated that in 2017 between 0.2 and 1.2 per cent of the population aged 15–64, comprising more than one third of the estimated number of global users, had used amphetamines in the past year in East and South-East Asia. Among the amphetamines, there are indications of an increase in the use of methamphetamine, in particular in East and South-East Asia (mainly crystalline methamphetamine) and North America.

Pharmaceutical stimulants are the main amphetamines misused in South and Central America

The overall past-year prevalence of use of amphetamines in countries in South and Central America remains low, at around 0.2 per cent of the population aged 15–64 in 2017. In many countries in the two subregions, among those that reported recent survey data, the non-medical use of pharmaceutical stimulants is the most prevalent issue related to ATS use. "Slimming pills" such as sibutramide hydrochloride monohydrate (e.g. Aderan®, Ipomex®) and phentermine (e.g. Duromine®, Suprenza®) along with methylphenidate and amphetamine are reported to be the most commonly misused pharmaceutical stimulants.[184, 185] The non-medical use of "slimming pills is reported as being higher among women than men.[186]

Recent information on the extent of the use of amphetamines in any of the countries in the Caribbean is not available. However, data from a secondary

182 E/INCB/2018/4.

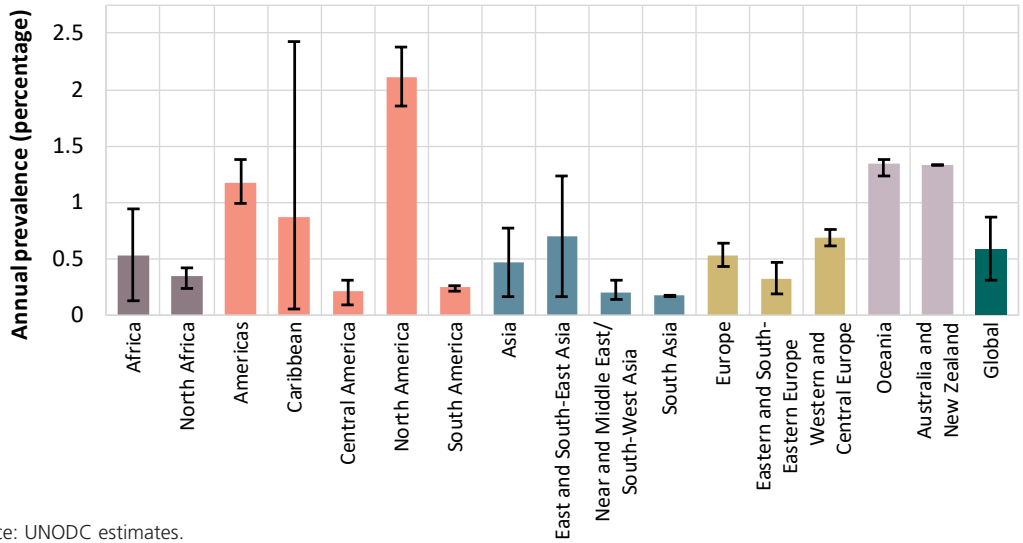
183 Global Drug Survey 2018 and previous years.

184 Argentina, Secretaría de Políticas Integrales sobre Drogas de la Nación Argentina (SEDRONAR), *Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas: Argentina 2017–Informe de Resultados No.1: Magnitud del Consumo de Sustancias a Nivel Nacional* (Buenos Aires, 2017).

185 El Salvador, Dirección Ejecutiva de la Comisión Nacional Antidrogas, "Estudio Nacional Sobre Consumo de Drogas en Población General de El Salvador 2014 (Octubre 2014).

186 SEDRONAR, *Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas*.

FIG. 49 Use of amphetamines, by region, 2017



Source: UNODC estimates.

school survey conducted in 2016 in 13 countries in the Caribbean show that the average past-year prevalence of the non-medical use of stimulants among students aged 15–17 was 2.2 per cent – ranging between 3.7 per cent in the Dominica to 1.2 per cent in Guyana.[187] On average, 1.5 per cent of surveyed students aged 15–17 reported past-month non-medical use of pharmaceutical stimulants.

Increase in methamphetamine use in the United States

The annual prevalence of use of amphetamines in North America in 2017 was estimated at 2.1 per cent, which is mainly a reflection of the use of amphetamines in the United States: the annual prevalence in Canada and Mexico was estimated at around 0.2 per cent of the population aged 15–64. In the United States, the non-medical use of pharmaceutical stimulants (mostly amphetamine and methylphenidate) is more prevalent than the use of methamphetamine, with around 2.1 per cent of the population (5.8 million people) aged 12 and older reporting past-year use of pharmaceutical stimulants for non-medical purposes in 2017, while 0.6 per cent (1.6 million people) used methamphetamine.[188, 189]

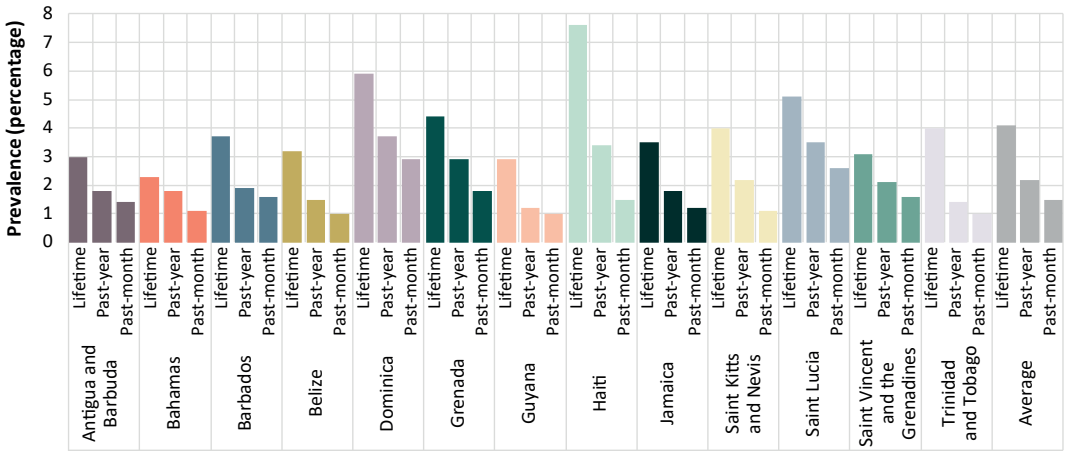
In the United States, the non-medical use of pharmaceutical stimulants in 2017 was more prevalent among people aged 18–25 than among other age groups. Among those aged 18–25, the non-medical use of pharmaceutical stimulants was comparatively higher among men, white people with a college degree and those in part-time employment. By contrast, the use of methamphetamine was comparatively higher among people aged 18–25 (nearly the same level for men and women); within this age group it was higher among those who had not completed high school and those who were unemployed. The use of methamphetamine was also more prevalent in less urbanized and rural counties than in metropolitan areas.

187 Inter-American Drug Abuse Control Commission, *A Report on Students' Drug Use in 13 Caribbean Countries: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and* Tobag, document OEA/Ser.L/XIV.6.46"

188 Prior to 2015, the household survey included questions on methamphetamine use in the context of questions on the misuse of prescription stimulants as methamphetamine is legally available by prescription in the United States (Desoxyn®). Currently, most methamphetamine used in the United States is produced and distributed illicitly rather than through the pharmaceutical industry. In 2015, a new question was added in the survey to capture the illicit use of methamphetamine in the United States and therefore the trend in methamphetamine use from 2015 onwards is not comparable with previous years.

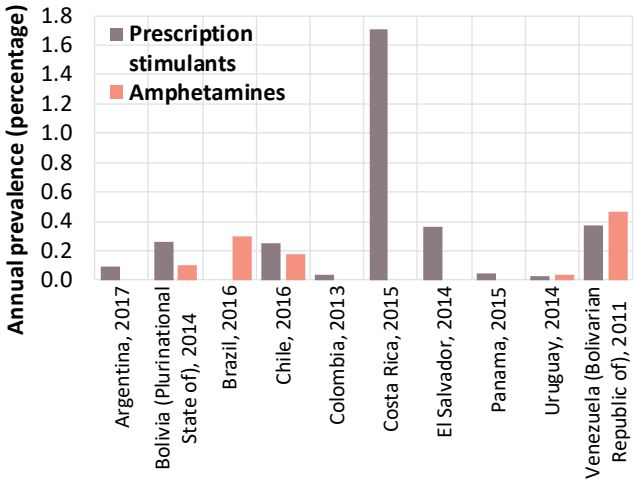
189 United States, SAMHSA, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

FIG. 50 Non-medical use of stimulants among secondary school students in 13 countries in the Caribbean, 2016



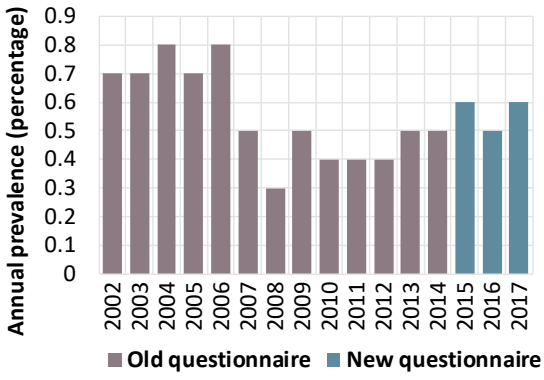
Source: Inter-American Drug Abuse Control Commission A Report on Students' Drug use in 13 Caribbean Countries: 2016.

FIG. 51 Use of amphetamines and non-medical use of prescription stimulants in Central and South America



Source: UNODC, responses to the annual report questionnaire.

FIG. 52 Methamphetamine use among the population 12 and older in the United States, 2002–2017

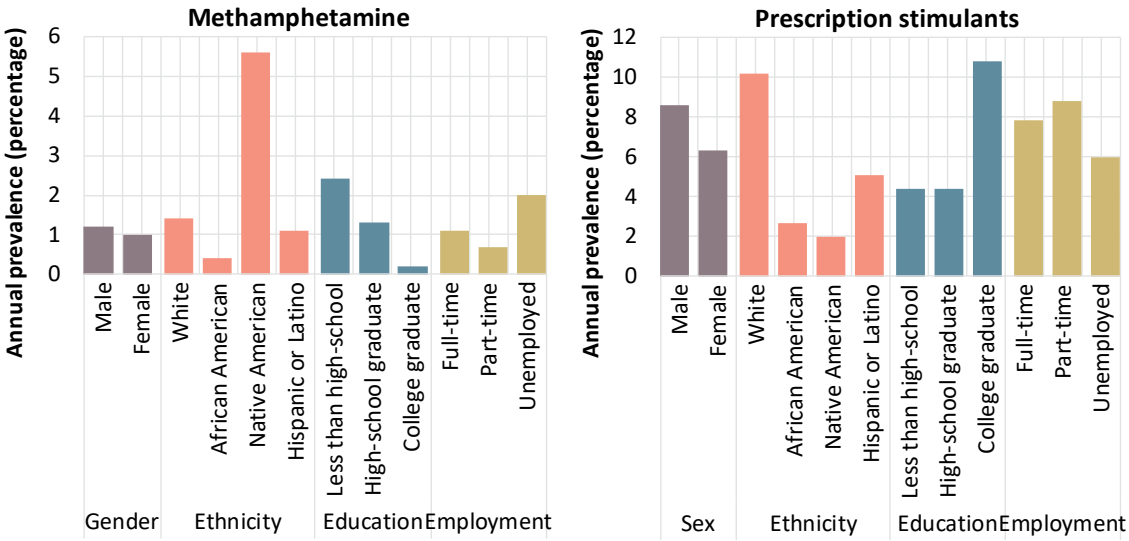


Source: SAMHSA, National Survey on Drug Use and Health (different years).

Note: Owing to changes in the questionnaire in 2015, the trends between 2002 and 2014 and 2015 and 2017 are not comparable.

While the use of methamphetamine is reported among fewer individuals than the non-medical use of pharmaceutical stimulants in the United States, the use of methamphetamine appears to be more regular and potentially more harmful. In 2017, roughly 0.3 per cent of the population aged 18 and older reported using methamphetamine in the past 30 days; 40 per cent of them were daily or near-daily users. By contrast, of the 0.7 per cent who had used prescription stimulants non-medically in the past month, only 7 per cent were daily or near-daily users; most had used them for either 1 or 2 days (43 per cent) or 3 to 5 days (32 per cent) in the past month. Among people aged 18 and older who were diagnosed with substance use disorders, the prevalence of past-year use of methamphetamine was 0.4 per cent; for non-medical use of pharmaceutical stimulants, the prevalence was 0.2 per cent.

FIG. 53 Methamphetamine use and non-medical use of prescription stimulants among young people aged 18–25 in the United States by sociodemographic characteristics, 2017



Source: SAMHSA, "2017 National Survey on Drug Use and Health: Detailed Tables", (Rockville, Maryland 2018).

Indicators of an increase in methamphetamine use and health harms across the United States

National survey data in the United States suggest that past-year methamphetamine use remained stable overall among the general population over the period 2015–2017.[190] This survey excludes institutionalized and homeless populations, however, both of which may be affected by disproportionately higher rates of drug use. Other indicators actually point to an increase in methamphetamine use in the United States. In a context where the availability of methamphetamine seems to be increasing, with reported purity being high (over 90 per cent) and the price per pure gram having decreased 14 per cent) over the period 2012–2017,[191] the proportion of the workforce testing positive for methamphetamine has been increasing steadily since 2012 and reached 33 per cent in 2017.[192] The number of treatment admissions for primary methamphetamine use disorders also increased by 45 per cent over the period 2012–2016, from 6 per cent of total treatment admissions for drug use disorders in 2012 to 10 per cent in 2016.[193]

Increase in methamphetamine use among people with opioid use disorders in the United States

A nationwide study among people entering treatment in the United States shows that over the period 2011–2017 there was a considerable increase in the proportion of people with opioid use disorders entering treatment who also reported the use of methamphetamine, both concomitant and sequential.[194] This increase was significantly higher in the western part of the United States than in the rest of the country and among people living in urban and

190 Prior to 2015, the household survey included questions on methamphetamine use in the context of questions on the misuse of prescription stimulants; from 2015, a separate question was added to the survey to capture the use of illicit methamphetamine among the general population. Therefore, it is difficult to construct a time trend of the use of methamphetamine that goes back beyond 2015.

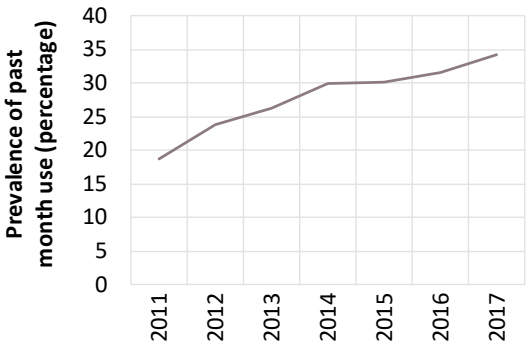
191 United States, Department of Justice, Drug Enforcement Administration, *2018 National Drug Threat Assessment* (October 2018).

192 Ibid.

193 SAMHSA, Treatment Episode Data Set (TEDS). Based on data received through March 2018.

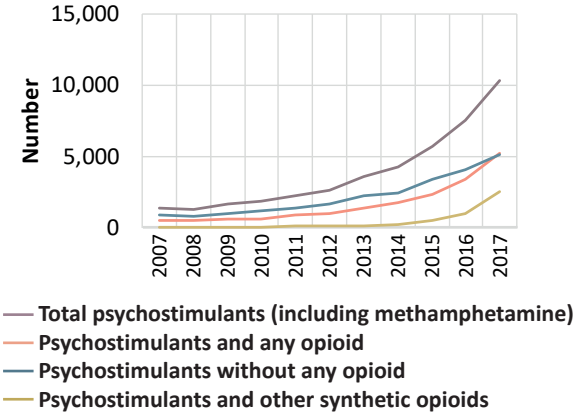
194 Matthew S. Ellis, Zachary A. Kasper and Theodore J. Cicero, "Twin epidemics: the surging rise of methamphetamine use in chronic opioid users", *Drug and Alcohol Dependence,* vol. 193 (December 2018), pp. 14–20.

FIG. 54 Methamphetamine use among people in the United States with opioid use disorders who were entering treatment, 2011–2017



Source: Matthew S. Ellis, Zachary A. Kasper and Theodore J. Cicero, "Twin epidemics: the surging rise of methamphetamine use in chronic opioid users", *Drug and Alcohol Dependence,* vol. 193 (December 2018).

FIG. 55 Overdose deaths attributed to psychostimulants with and without opioids, 1999–2017



Source: United States, Centers for Disease Control and Prevention, National Center on Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC Wonder).

Note: The category "psychostimulants" referes to psychostimulants with abuse potential and mainly includes methamphetamine; "any opioids" inlcudes all prescription opioids and heroin; "other synthetic opioids" is dominated by fentanyl.

suburban settings than those living in rural settings. It was also more marked among women than men. While easy access to the drug and its low price were suggested as the main reasons for the concomitant use of methamphetamine, it seems that opioid users were also expressly seeking the high that concomitant use of methamphetamine and opioids provides. However, the study findings also suggest that the majority of people with opioid use disorders who were using methamphetamine were using it sequentially as a means of balancing the highs and lows of these two dichotomous drugs.[195]

The number of overdose deaths attributed to the use of psychostimulants[196] (including methamphetamine) increased in the United States over the period 2007–2017. In recent years, this increase has been particularly marked in cases involving both psychostimulants and synthetic opioids (72-fold increase) and those involving both psychostimulants and any opioid (11-fold increase). The rate of methamphetamine-related deaths per 100,000 population was higher in the eastern part of the United States than in the rest of the country.

Overall stable trends in use of amphetamines reported in surveys in Western and Central Europe, while wastewater analysis shows an increase in consumption

The past-year annual prevalence of use of amphetamines in Europe in 2017 is estimated at 0.5 per cent of the population, or around 2.9 million people. Among those aged 15–64, the extent of use of amphetamines in Western and Central Europe was 0.7 per cent of the population, or 2.2 million people; in Eastern and South-Eastern Europe, the figure was 0.3 per cent, or 700,000 people. In Western and Central Europe, amphetamine is more commonly used than methamphetamine, the use of which has mainly been reported in Czechia, although increasing use of the drug is now also being reported in other countries, such as Cyprus, Germany (the eastern part), Slovakia and Spain, as well as parts of northern Europe.[197] With an estimated past-year

195 Ibid.

196 Psychostimulants with abuse potential include methamphetamine, amphetamine, methylphenidate and MDMA. Between 2010 and 2015 approximately 85–90 per cent of the drug poisoning deaths that were reported under psychostimulants mentioned methamphetamine in the death certificate.

197 EMCCDA, *European Drug Report 2018: Trends and Devel-*

FIG. 56 Trends in the use of amphetamines in countries in Western and Central Europe that reported recent data

Source: UNODC, responses to the annual report questionnaire.

prevalence of 1.0 per cent, the use of amphetamines is higher among young adults aged 15–34 than other age groups.[198] In some countries in Western and Central Europe, trends in use of amphetamines are either stable or declining, especially in Czechia, Spain and the United Kingdom, whereas the latest survey data from Denmark, Germany and Norway show an increase in use of amphetamines.

European waste-water analysis confirms the patterns of use found in household survey data, which point to an overall higher prevalence of use of amphetamine than of methamphetamine, and to methamphetamine use dominating in just a few countries. Wastewater analyses were conducted in 80 cities in 21 countries across Europe, with a total of 84 sites covering a combined population of 32 million people. Those analyses suggest that the quantity of amphetamine consumed per capita over the period 2011–2018 was double that of methamphetamine (2.6 times larger in 2018). In most cities in Europe, quantities of amphetamine consumed dominated in 2018 (or latest year available), in a quarter of the sites. However, in Czechia, Germany (in regions bordering Czechia), northern Italy (Milan), Lithuania, Slovakia, Spain (Madrid and Barcelona), some cities in Switzerland (Zurich, Basel, Geneva) and Turkey (Istanbul), the level of methamphetamine found in wastewater was higher than the level of amphetamine.[199]

Quantities of amphetamine and methamphetamine found in wastewater over the period 2011–2018 increased by at least a third overall in the participating cities, albeit with some fluctuations. The upward trend was more marked in the case of amphetamine. However, since a peak in 2016, the quantities of methamphetamine found in wastewater have

opments (Luxembourg, Publications Office of the European Union, 2018).

198 Ibid.

199 UNODC analysis based on the data from Sewage Analysis CORe Group–Europe (SCORE) 2018.

decreased, in particular in cities in Czechia and Slovakia.

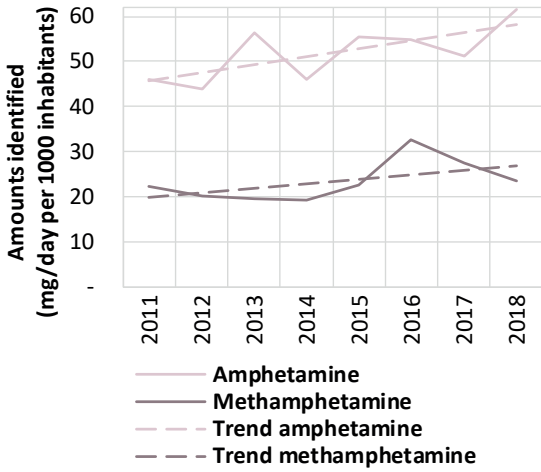
Increasing use of crystalline methamphetamine in East and South-East Asia

A lack of sufficient quality data based on household surveys in Asia makes it difficult to estimate with precision the prevalence of drug use in the region. In Asia in 2017, based on the limited data available, it is estimated that 0.2 to 0.8 per cent of the population aged 15–64 (5 million to 23 million people) used amphetamines in the past year; roughly 80 per cent of those individuals reside in East and South-East Asia. Recent household surveys conducted in that subregion show that the number of past-year methamphetamine users was roughly 1 million (0.5 per cent of the population aged 10–59) in Indonesia in 2017; 860,000 (1.1 per cent of the population aged 10–64) in the Philippines in 2016; and 440,000 (0.9 per cent of the population aged 12–65) in Thailand[200] in 2016.

In Thailand, where trend data on methamphetamine use across multiple years are available, there has been an increase in the use of methamphetamine, both in crystalline and tablet form, since 2008. However, the number of people in treatment for methamphetamine use disorders, who account for more than three quarters of people in treatment for drug use disorders in that country, has declined from its peak in 2013. The number of people reporting the use of crystalline methamphetamine in Thailand – 42,000 past-year users or 0.08 per cent of the population in 2016 – remains much smaller than the number using methamphetamine in tablet form.[201]

In other countries in East and South-East Asia, drug treatment admissions are the only indicator, albeit an indirect one, that can be used to provide information on patterns of drug use. With the exception of Viet Nam, all countries in the subregion reported methamphetamine as the primary drug of concern in 2018 (or the latest available year). The majority

FIG. 57 Quantities of amphetamines found in wastewater, in 80 cities in Europe, 2011–2018



Source: UNODC calculations based on wastewater data provided by SCORE Europe.

** Note: Average quantity of benzoylecgonine found in wastewater in 80 cities (82 sites) weighted by the population of the sites: assumption of gradual increase/decrease in years in which no analysis took place in a city and no change since latest available data.*

of people seeking drug treatment in Brunei Darussalam, Cambodia, Malaysia, the Philippines and Singapore were users of crystalline methamphetamine; in the Lao People's Democratic Republic and Thailand, they were primarily users of methamphetamine tablets.[202] Several countries in the subregion, including Brunei Darussalam, Cambodia, Indonesia, Malaysia and Singapore, reported an upward trend in the number of methamphetamine users brought into formal contact with authorities for drug use, which may reflect an increase in the number of users and/or an increase in law enforcement activities. An increase in the quantities of methamphetamine seized and a decrease in the retail price of the drug in the subregion suggest that the supply of methamphetamine – and of crystalline methamphetamine, in particular – has expanded, with a possible repercussion being an increase in the number of people using methamphetamine.[203]

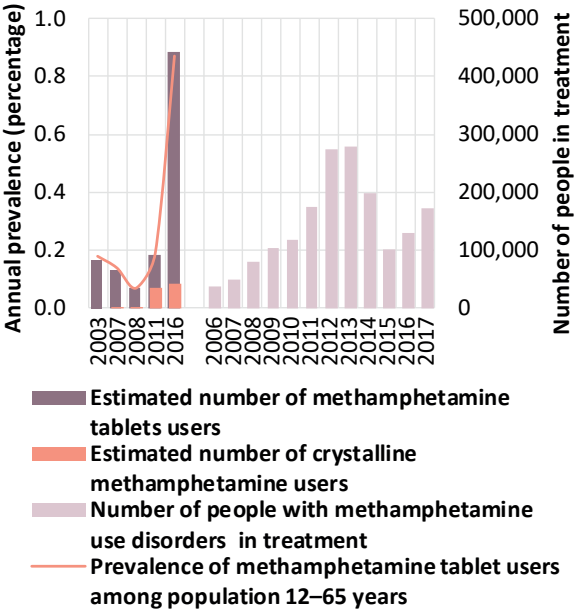
200 Sourced from data from the Administrative Committee of Substance Abuse Academic Network of Thailand as reported in Darika Saingam, "Substance abuse policy in Thailand: current challenges and future strategies", *Journal of Drug and Alcohol Research*, vol. 7 (2018), pp 1–10.

201 Ibid.

202 Manop Kanato and others, eds., *ASEAN Drug Monitoring Report 2017* (Bangkok, ASEAN Narcotics Cooperation Centre, August 2018).

203 UNODC, *Synthetic Drugs in East and South-East Asia: Trends and Patterns of Amphetamine-type Stimulants and New*

FIG. 58 Methamphetamine use and people in treatment for methamphetamine use disorders, Thailand, 2003–2017



Source: based on data reported in Darika Saingam, "Substance Abuse Policy in Thailand: Current Challenges and Future Strategies", *Journal of Drug and Alcohol Research*, vol. 7 (2018); the data on people in treatment for methamphetamine use disorders is from DAINAP.

Signs of stable to declining trends in the use of methamphetamine in China

Data on registered drug users suggest that after years of sharp increases, methamphetamine use is stabilizing in China. Users of synthetic drugs (mainly methamphetamine) accounted for 60 per cent of the 2.5 million drug users officially registered by the authorities in 2017. This proportion has been increasing since the early 2000s, when roughly 75 per cent of registered drug users were users of opioids. The number of synthetic drug users registered in China increased between 2008 and 2014 and has remained stable since then.

A study[204] was conducted on wastewater analysis in Dalian, China – a port city in the northeast that is considered as a typical city in that country by the authors of the study. According to the study, the concentration of methamphetamine in the wastewater, the estimated quantity consumed by the population per capita and the estimated prevalence rate all peaked in 2016. As of 2018, those measures had declined considerably, to levels that were much lower than those reported in 2015.[205, 206]

Low levels of the use of amphetamines in other parts of Asia and in Africa

The use of amphetamines in other subregions in Asia is lower than in East and South-East Asia. In South-West Asia, for example, the past-year prevalence of use of amphetamines in the Islamic Republic of Iran is estimated at roughly 0.4 per cent of the adult population aged 15–64 in 2015. The use of methamphetamine in the Islamic Republic of Iran was not common prior to 2005, but it has since become common among people who use drugs and, in particular, among people with opioid use disorders who are in long-term agonist treatment.[207, 208] Similarly, in South Asia, less than 0.2 per cent of the population aged 10–75 in India, or roughly 1.9 million people, reported past-year use of ATS in 2018.[209]

There is insufficient data on the use of amphetamines in Africa. In, 2017, however, past-year use was estimated at between 0.1 and 1.0 per cent of the population aged 15–64 (between 900,000 and 6.6 million people). In Nigeria in 2018, past-year use in the same age group was estimated at 0.2 per

Psychoactive Substances–A Report from the Global SMART Programme (March 2019).

204 Zhe Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018 detected by wastewater-based epidemiology in Dalian, China", *Drug and Alcohol Dependence,* vol. 194 (January 2019), pp. 302–309.

205 Ibid.

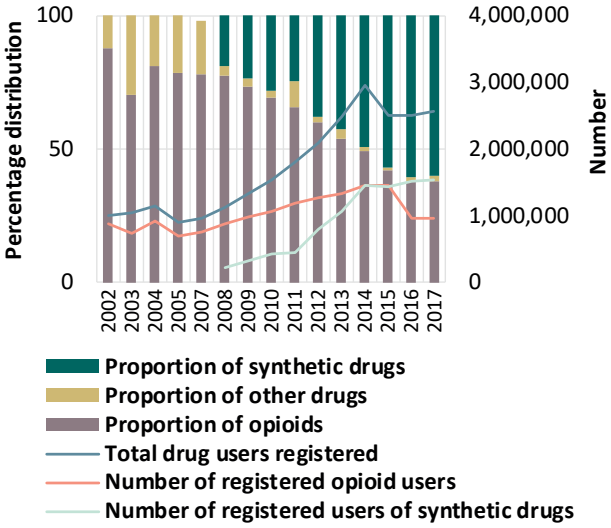
206 Based on the information on human metabolic parameters of methamphetamine, information of daily flow rate and the population served by wastewater treatment plants the authors used the concentration levels of methamphetamine in the wastewater to back-calculate real-time consumption of methamphetamine and the prevalence in the city's municipalities.

207 Atireza Bananej and others, "No evidence of subgroups found in amphetamine consumers in Iran", *Neuropsychiatrie*, vol. 32 No. 2; (March 2018) pp 69–74.

208 Alireza Noroozi, Mohsen Malekinejad and Afarin Rahimi-Movaghar, "Factors influencing transition to shisheh (methamphetamine) among young people who use drugs in Tehran: a qualitative study", *Journal of Psychoactive Drugs* vol. 50, No. 3 (January 2018), pp. 214–223.

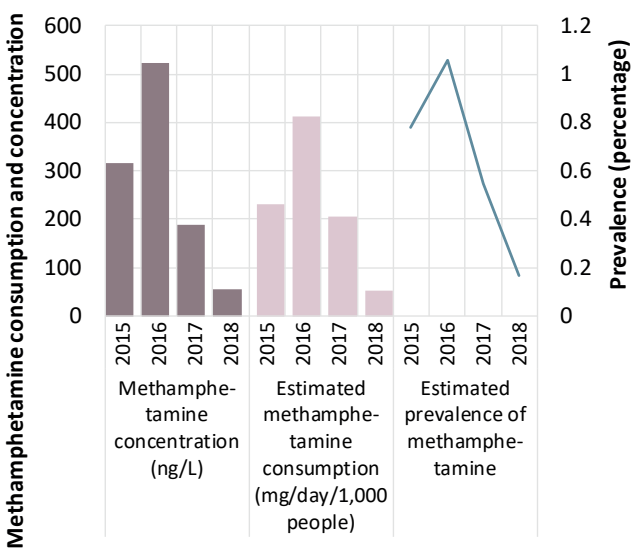
209 Atul Ambekar and others, *Magnitude of Substance Use in India 2019* (New Delhi, Ministry of Social Justice and Empowerment, 2019).

FIG. 59 Registered drug users, by drug type in China, 2002–2017



Source: China, National Narcotics Control Committee, *Annual Report on Drug Control in China* (different years).

FIG. 60 Methamphetamine use in Dalian, China, 2015–2018



Source: Zhe Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018 detected by wastewater-based epidemiology in Dalian, China", *Drug and Alcohol Dependence*, vol. 194 (January 2019).

cent, or an estimated 240,000 people. Among that group, the non-medical use of pharmaceutical amphetamine was more common than the use of methamphetamine.[210]

Mixed trends in the prevalence of methamphetamine use in Oceania

In Australia, the past-year prevalence of use of amphetamines in 2016 was estimated at 1.4 per cent of those aged 14 and older, or 280,000 past-year users.[211] More than half of them (57 per cent) reported crystalline methamphetamine as their main drug of use, while others reported methamphetamine powder (20 per cent) and the non-medical use of prescription amphetamines (11 per cent). The past-year prevalence of the use of amphetamines (2.8 per cent) was highest among young adults aged 20–29.

The past-year use of methamphetamine in Australia has declined considerably since 2001. That decline was more marked over the period 2013–2016 and was driven by a decrease during that period in the past-year prevalence among young adults aged 20–29 (from 5.7 per cent to 2.8 per cent). The decline in overall use of amphetamines masks the stabilization of the past-year use of crystalline methamphetamine during the same period, while the frequency of crystalline methamphetamine use increased, with a higher proportion of users reporting weekly use of the drug in 2016 than in 2013.

Crystalline methamphetamine remains the main substance most often injected in the past month among people who regularly inject drugs (44 per cent) in Australia,[212] although most of those individuals reported heroin as their drug of choice.[213] In addition, the frequency of crystalline methamphetamine use has increased among people who regularly inject drugs; they reported a median of 46 days of use, or twice weekly, in 2018. The

210 UNODC, *Drug use in Nigeria 2018* (Vienna, 2019).

211 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2016: Detailed findings*, Drug Statistics series No. 31, (Canberra, 2017)

212 Crystalline methamphetamine is considered as 80 per cent pure, whereas powder (speed) is typically around 10–20 per cent pure.

213 Amy Peacock and others, *Australian Drug Trends 2018: Key Findings from the National Illicit Drug Reporting System (IDRS) Interviews* (Sydney, University of New South Wales, National Drug and Alcohol Research Centre, 2018).

expansion of the crystalline methamphetamine market in Australia is confirmed by the higher perceived purity of the drug and its decreasing price, which reached 210 Australian dollars per gram in 2018, the price observed a decade earlier.[214]

After a fourfold increase over the period 2009–2015 in the quantity of methamphetamine found in wastewater in urban areas in Australia, subsequent analyses have found more stable levels of methamphetamine in wastewater in Queensland, Victoria (Melbourne) and New South Wales, and decreasing levels in Western Australia (Perth). Only Adelaide in South Australia continued to experience an upward trend in the quantity of methamphetamine found in wastewater, which carried on until to the beginning of 2018 before the start of a decline in the second quarter of that year.[215]

In New Zealand, the past-year prevalence of use of amphetamines in 2017 was estimated at roughly 1 per cent of the population aged 15–64, a figure that remained the same over the period 2014–2017; however, based on qualitative information reported by Member States, the use of methamphetamine in New Zealand is considered to have increased in recent years. According to the wastewater analysis carried out in Christchurch and Auckland's North Shore, the weekly quantity of methamphetamine consumed in New Zealand is estimated to have increased by 18 per cent during 2017.

"Ecstasy" use

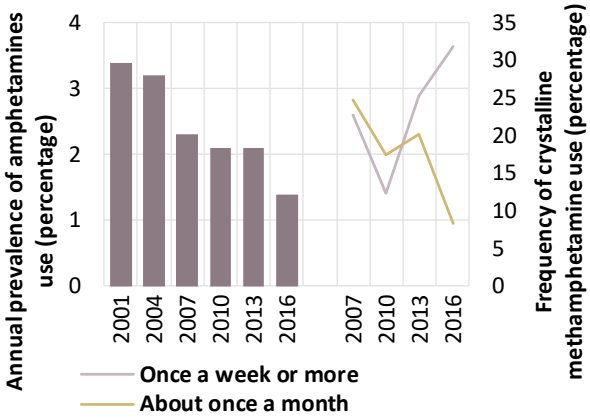
"Ecstasy" is a term that was originally used to describe tablets containing MDMA. However, over the past decade an increasing number of substances that are marketed as "ecstasy" have appeared on the market.[216] In the past few years, essentially three types of "ecstasy" products have been available on different markets, although not necessarily in all markets at the same time. Those products are tablets containing little or no MDMA, which may contain

214 Ibid.

215 Australian Criminal Intelligence Commission, the University of Queensland and University of South Australia, National Wastewater Drug Monitoring Program, Report No. 6, December 2018.

216 See also *World Drug Report 2017: Market Analysis of Synthetic Drugs–Amphetamine-type Stimulants, New Psychoactive Substances* (United Nations publication, Sales No. E.17.XI.10).

FIG. 61 Use of amphetamines and frequency of crystalline methamphetamine use in Australia among the population aged 14 and older, 2001–2016



Source: Australian Institute of Health and Welfare, National Drug Strategy Household Survey 2016: *Detailed Findings*, Drug Statistics Series No. 31 (Canberra, 2017).

any of its analogues (including MDA, MDEA, PMA or PMMA) or NPS (including 2CB or piperazines); tablets with a high MDMA content; and "ecstasy" sold in powder and crystal forms.[217, 218, 219]

The use of "ecstasy" is generally observed among young people in high-income countries and among affluent youth in urban centres in middle- and low-income countries.[220] Its use is mainly associated with recreational nightlife settings, including mainstream clubs and parties, having started in settings such as clubs, "raves" and festivals, where electronic dance music was played in the 1990s and early 2000s.[221] Binge use of "ecstasy" and polydrug use among young "ecstasy" users is a common phenomenon:[222]

217 Ibid.

218 EMCDDA, Recent changes in Europe's MDMA/ *Ecstasy Market: Results from an EMCDDA Trendspotter Study*, EMCDDA Rapid Communication Series (Luxembourg, Publications Office of the European Union, 2016)

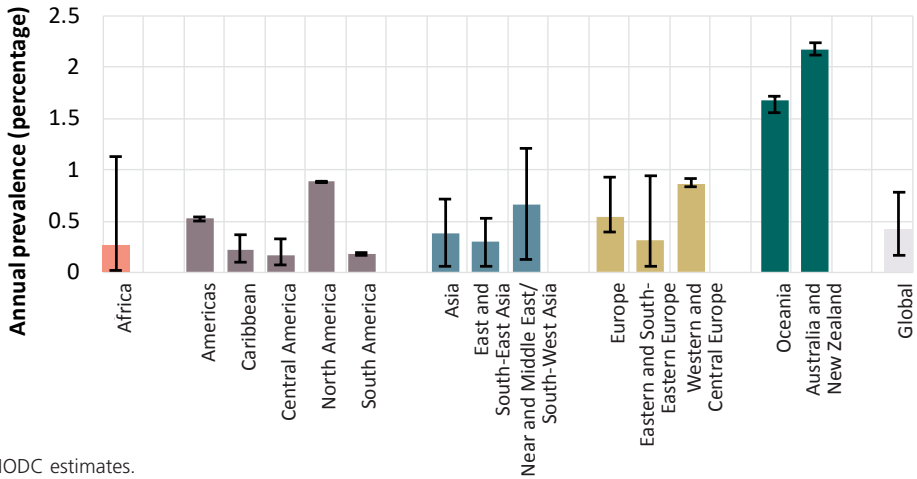
219 Thierry Favrod-Coune and Barbara Broers, "The Health Effect of Psychostimulants: A Literature Review", *Pharmaceuticals,* vol. 3, No. 7 (July 2010), pp. 2333–2361.

220 *World Drug Report 2018*, Drugs and Age – *Drugs and Associated Issues Among Young People and Older People* (United Nations publication, Sales No. E.18.XI.9 (Booklet 4)).

221 EMCDDA, *Recent changes in Europe's MDMA/ecstasy market*.

222 Claire E Sterk, Katherine P. Theall and Kirk W. Elifson, "Young adult ecstasy use patterns: quantities and combinations", *Journal of Drug Issues*, vol. 36, No. 1 (January 2006), pp. 201–228.

FIG. 62 "Ecstasy" use, by region, 2017



Source: UNODC estimates.

in addition to the use of tobacco and alcohol, the use of cannabis, methamphetamine, cocaine, GHB and ketamine is commonly reported among young "ecstasy" users.[223] Most polydrug use among people who use "ecstasy" and/or other drugs in club settings is reported in the context of experiencing the synergistic effect of the combined drugs or moderating the effects of – or "easing the come down" from a "high" resulting from the use of – other psychostimulants.[224]

Reflecting the level of uncertainty in the estimates of "ecstasy" use in some subregions, in 2017 it was estimated that 0.2 to 0.8 per cent of the global population aged 15– 64, or between 8.4 million and 40 million people, had used "ecstasy" in the past year. Prevalence rates of "ecstasy" use that are higher than the global average were reported in Australia and New Zealand (2.2 per cent), North America (0.9 per cent) and Western and Central Europe (0.9 per cent).

223 Christian Grov, Brian C Kelly and Jeffrey T. Parsons, "Polydrug use among club-going young adults recruited through time-space sampling", *Substance Use & Misuse*, vol. 44, No. 6 (July 2009) pp. 848–864.

224 Miriam W Boeri and others, "Poly-Drug Use among Ecstasy Users: Separate, Synergistic, and Indiscriminate Patterns", *Journal of Drug Issues*, vol. 38, No. 2 (April 2008), pp. 517–541.

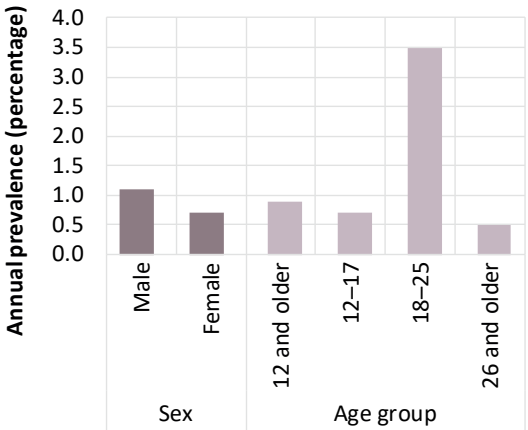
Low levels of "ecstasy" use in both Central and South America, but some countries with new data show an increase

The use of "ecstasy" in South and Central America remains lower than the global average, with an estimated annual prevalence of 0.2 per cent, equivalent to roughly 500,000 past-year "ecstasy" users in South America and 100,000 in Central America in 2017. In some of the countries in those subregions where recent estimates and trend data are available, the annual prevalence of "ecstasy" use increased in the past decade. For example, in Costa Rica, the prevalence rose from 0.2 per cent in 2010 to 0.5 per cent in 2015. It also increased in Argentina, from 0.2 per cent in 2008 to 0.3 per cent in 2017. In Chile, however, "ecstasy" use has remained stable at around 0.1 per cent of the adult population over the past decade.

Overall stable trends in "ecstasy" use in North America

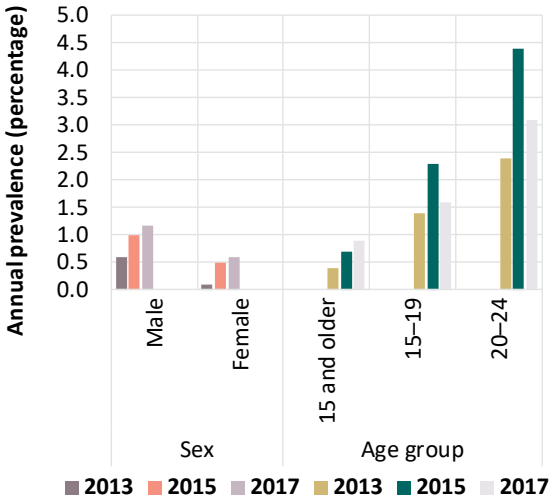
In North America, it is estimated that 0.9 per cent of the population aged 15–64 were past-year "ecstasy" users in 2017. In the United States, "ecstasy" use remained stable over the period 2015–2017, with 0.9 per cent of the population aged 12 and older, or around 2.5 million people, estimated to be past-year users of "ecstasy" in 2017. The annual prevalence of "ecstasy" use was reportedly highest

FIG. 63 "Ecstasy" use in the United States, by sex and by age group, 2017



Source: SAMHSA, *2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018)

FIG. 64 "Ecstasy use in Canada, by sex and by age group, 2013-2017



Source: Canadian Tobacco, Alcohol and Drugs Survey, 2013, 2015 and 2017.

among young adults aged 18–25, who accounted for 400,000 past-year users.

In Canada, by contrast, "ecstasy" use showed an increasing trend over the period 2015–2017, with over 200,000 people aged 15 and older (0.9 per cent) estimated to be past-year "ecstasy" users in 2017. As in other countries, the highest past-year prevalence was reported among young adults (aged 20–24). The increase in past-year "ecstasy" use over the period 2013–2017 was more marked among women than men and among young adults.

Increasing trends in "ecstasy" use Western and Central Europe

In Europe, roughly 0.5 per cent of the population aged 15–64 is estimated to have used "ecstasy" over the past year in 2017, with the rate in Western and Central Europe (0.9 per cent, or 2.7 million pas year users) being triple that in Eastern and South-Eastern Europe (0.3 per cent, or 1.3 million past-year users).

In Western and Central Europe, the countries that reported new data – Denmark, Norway and the United Kingdom – registered an increase in "ecstasy" use in 2017. In the United Kingdom (specifically, England and Wales), the main increase in "ecstasy" use, although fluctuating in the preceding years, was reported among those aged 16–24, with an increase from 3.3 per cent in 2011–2012 to over 5 per cent in 2017–2018. By contrast, there has been a long-term downwards trend in "ecstasy" use in Spain since 2009 and in Portugal since 2007.

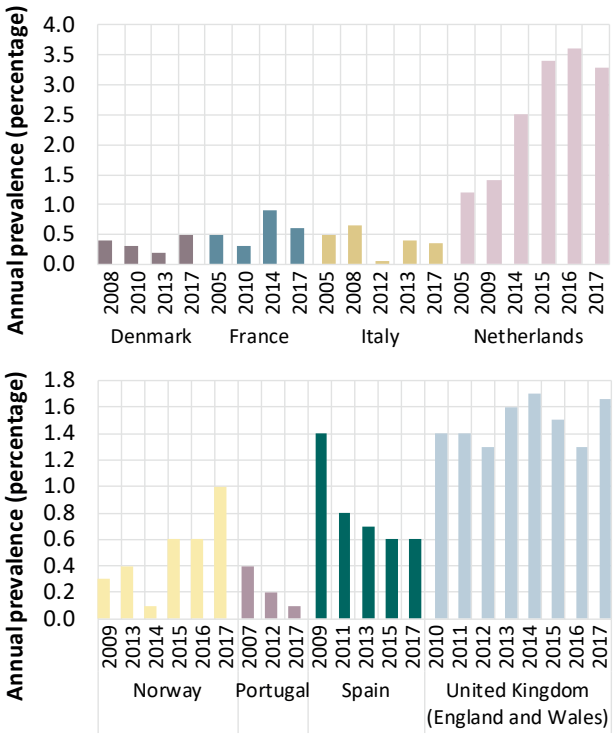
Moreover, analyses of wastewater across Europe shows a clear upward trend in "ecstasy" content over the period 2011–2018.[225] The highest concentrations of "ecstasy" found in wastewater in 2018 (or latest available year) were identified in a number of cities in the Netherlands (Amsterdam, Eindhoven and Utrecht), Belgium (Antwerp) and Switzerland (Zurich). The findings of the analyses suggest that the quantity of "ecstasy" consumed increased by at least 55 per cent over the period 2011–2018 in the participating cities.

Diverging trends in "ecstasy" use in Australia and New Zealand

"Ecstasy" use in Australia has been declining since 2004, when the past-year prevalence was estimated at 3.4 per cent in the population aged 14 and older. In 2016, it was still relatively high at 2.2 per cent; however, nearly half of those past-year users reported using "ecstasy" once or twice a year, while a third reported using it every few months. This is

225 Sewage Analysis CORe Group Europe (SCORE).

FIG. 65 Trends in "ecstasy" use in countries in Western and Central Europe that reported new data in 2017



Source UNODC, responses to annual report questionnaire.

confirmed by wastewater analysis, which has shown low levels of per-capita consumption of "ecstasy" across the country.[226] Nonetheless, the "ecstasy" market in Australia continued to diversify in 2017; there has been a significant increase in the use of "ecstasy" in forms other than tablets, such as crystals, capsules and powders.[227]

The past-year prevalence of "ecstasy" use in New Zealand in 2013 was estimated at 2 per cent in 2013. Although new prevalence estimates are not available for New Zealand, wastewater analysis points to a 350 per cent increase in the quantity of MDMA consumed in the country in 2017. MDMA consumption in Christchurch surpassed that of methamphetamine in December 2017. Together with an increase in the quantities of MDMA seized over the period 2015–2017, this resulted in qualitative assessments suggesting that the demand for MDMA and "ecstasy"-type substances has been increasing rapidly in New Zealand.

226 Australian Criminal Intelligence Commission, the University of Queensland and University of South Australia, National Wastewater Drug Monitoring Program, Report 6, December 2018.

227 J. Uporova and others, *Australian Trends in Ecstasy and Related Drug Markets* 2017: Findings from the Ecstasy and Related Drugs Reporting System (EDRS), Australian Drug Trends Series No. 190 (Sydney, University of New South Wales, National Drug and Alcohol Research Centre, 2018).

STIMULANT NEW PSYCHOACTIVE SUBSTANCES

Stimulant NPS can be considered to be substances with stimulant properties that are not controlled by the Single Convention on Narcotic Drugs of 1961 or the Convention on Psychotropic Substances of 1971, but which may pose a public health threat similar to the substances that are under international control. Stimulant NPS include substances that have been designed to mimic established substances with stimulant properties that are under international control, such as amphetamine, methamphetamine, cathinone and methcathinone.

Whether or not a substance is considered to be a stimulant NPS is complicated by the fact that some of these substances have several pharmacological properties, including stimulant, hallucinogenic and analgesic. Moreover, structural similarities between the various molecules in a substance group do not necessarily imply pharmacological similarities. Some groups of NPS, such as cathinones, can be considered to be stimulants regardless of the approach used to classify them. For other substances, however, the characterization of the stimulant effect is not straightforward. Phenethylamines, for example, tend to have stimulant properties, but phenethylamines of the 2C family of drugs (e.g., 2CB, 2CD and 2CE) primarily have hallucinogenic rather than stimulant properties and are often used as substitutes for MDMA. Aminoindanes, which predominantly act as central nervous system stimulants, have also been found in the NPS market as substitutes for MDMA, owing to their empathogenic and entactogenic effects as serotonin-releasing drugs. They also have analgesic properties.[228] Likewise, piperazines, which tend to have stimulant effects have been frequently used as substitutes for "ecstasy". In one case, however, the piperazine MT-45 was found to have pharmaceutical effects resembling those of synthetic opioids. It was therefore, like most other opioids, placed under control of the 1961 Convention by the Commission on Narcotic Drugs, in 2016.[229]

The challenge when analysing NPS stimulants is not only in their classification but also in the rapid dynamics of the market and the control system. A number of key stimulant NPS, such as mephedrone (4-methylmethcathinone), MDPV and methylone (3,4-methylenedioxy-*N*-methylcathinone) have been scheduled at the international level in 2015 or later; as a result, by definition they have ceased to be NPS. At the same time, however, a number of countries continue to report "bath salts" as NPS even when they actually contain various cathinones, such as mephedrone, MPDV and methylone, which are already under international control.

This section describes the market, in terms of supply of and demand for the various substances that are currently considered to be NPS stimulants or were considered to be NPS stimulants prior to 2015.

Number of newly identified stimulant new psychoactive substances increased year on year over the period 2009–2017

Similar to stimulants under international control, stimulant NPS share subjective effects in humans such as "boosted mood" or euphoria, feelings of empathy and compassion (empathogenic and entactogenic effects of serotonin-releasing drugs), increased sociability and sex drive, a perceived increase in the ability to learn and focus, increased energy and alertness.[230]

The number of stimulant NPS identified over the period 2009–2017 increased more than fourfold, from 48 substances in 2009 to a peak of 206 in 2015, a number that has remained stable since then. In most years, stimulant NPS have been the largest group of NPS identified and reported by Member States, followed by synthetic cannabinoids. Over a third of all NPS identified since 2009 are stimulants,

228 UNODC, Laboratory and Scientific Section Portals, Aminoindanes. Available at www.unodc.org/.

229 UNODC, Commission on Narcotic Drugs, "Scheduling procedures resource material". Available at www.unodc.org, based on recommendations of scheduling MT-45 in Schedule I of the Single Convention on Narcotic Drugs of 1961 (E/CN.7/2016/9); Commission on Narcotic Drugs decision [[59/1 on inclusion of acetylfentanyl in Schedules I and IV of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol and decision 59/2 on inclusion of MT-45 in Schedule I of the 1961 Convention as amended by the 1972 Protocol (E/2016/28)]] on international control of acetylfentanyl and MT-45 enters into force, June 2016.

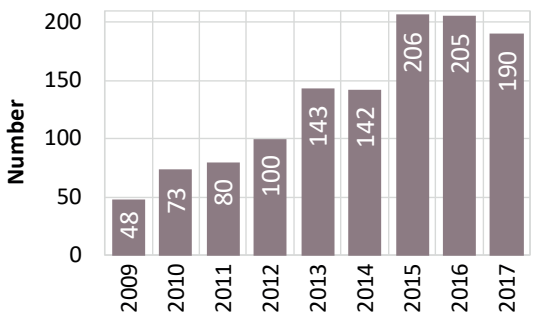
230 M. Rosaria Vari and others, "New psychoactive substances: synthetic stimulants", *WIREs Forensic Science,* vol. 1, No. 2 (March/April 2019), e1197.

TABLE 2 New psychoactive substances identified or reported for the first time in 2017 and considered as stimulants for the purpose of this report

Substances	Substances
N-Acetyl-4-bromo-2,5-dimethoxyamphetamine	3-Fluoroethamphetamine
N-Acetyl-3-methylmethcathinone	3-Fluoroethcathinone
1-(1-Benzofuran-4-yl)-*N*-ethylpropan-2-amine (4-EAPB)	4-Fluoro-*N*-ethylpentedrone
1-(5-Chlorothiophen-2-yl)-2-(methylamino)propan-1-one (5Cl-bk-MPA)	2-Fluorophenmetrazine
3,4-Dichloroethcathinone	1-[1-(2-Fluorophenyl)propan-2-yl]pyrrolidine
3,4-Dichloro-*N*, *N*-cyclohexylmethylmethcathinone	1-(4-Fluorophenyl)-4-methyl-2-(pyrrolidin-1-yl)pentan-1-one (4F-α-PHiP)
1-(2,3-Dihydro-1*H*-inden-5-yl)-2-(methylamino)propan-1-one	2-(Isopropylamino)-1-phenylhexan-1-one (NiPH)
3,4-Dimethoxymethcathinone	2-(Methylamino)-1-(naphthalen-2-yl)propan-1-one
2,5-Dimethoxy-4-methylthioamphetamine	2-Methylamphetamine
2-(2,5-Dimethoxyphenyl)-*N*-(2-methoxybenzyl)ethan-1-amine	4-Methyldiethcathinone
1,4-Dimethylamylamine	2,3-Methylenedioxymethamphetamine
2-(Ethylamino)-4-methyl-1-phenylpentan-1-one (NEiH)	3,4-Methylenedioxy-β-methoxyphenethylamine
2-Fluoroethamphetamine	Octodrine

Source: UNODC early warning advisory.

FIG. 66 Number of stimulant NPS reported annually at the global level, 2009–2019



Source: UNODC, early warning advisory on new psychoactive substances (classification as of March 2019).

including 39 per cent of all NPS identified in 2017. A total of 26 out of the 79 new substances that were identified and reported for the first time in 2017 were stimulants.[231]

Most of the new stimulant NPS identified on the markets and reported to UNODC in 2017 were cathinones or phenethylamines.[232]

231 UNODC, early warning advisory on new psychoactive substances.

232 Ibid.

Market for stimulant new psychoactive substances appears to still be growing

Quantities of stimulant NPS seized increased slightly (5 per cent) in 2017 from the previous year, mainly driven by seizures of cathinones, which rose by 4 per cent to 2.8 tons, most of which was accounted for by 2.7 tons of the cathinone metamfepramone seized in the Russian Federation. The largest rise in relative terms was of phenethylamines, from 0.2 kg in 2016 to 39 kg in 2017. By contrast, quantities of piperazines and aminoindanes seized decreased by 95 per cent or more in 2017 from a year earlier.

Quantities of stimulant NPS seized fluctuated markedly over the period 2009–2017 within an overall upward trend to a peak reported in 2015. The fluctuations were sometimes the result of large quantities being seized in individual countries. Thus, they may not necessarily reflect real changes in the market, but rather changes in the national and international control of substances, or differences in the capacity of forensic laboratories to detect substances. The most widely seized NPS stimulants in this period were piperazines (in 2009, 2010 and 2013), phenethylamines (in 2011 and 2012) and cathinones (in 2014 to 2017).

Challenges in analysing the market for stimulant new psychoactive substances

There are a number of issues that challenge the use of traditional supply and demand indicators in the analysis of stimulant NPS markets. Seizures of stimulant NPS that are not under international control depend, to a large extent, on information provided by countries that have already put them under national control. However, this does not mean that trafficking in those substances does not occur in countries that have not yet put them under national control. NPS seizure data will thus always be characterized by a certain bias.

The fact that NPS are not under international control also means that some countries only report broad categories of such substances seized while others report them by their specific names, which may differ from country to country. There is also a problem with their classification when seizures contain more than one substance or more than one group of substances: for instance, some substances may be part of the phenethylamine group while others may be part of the cathinone group. Given the inherent problems in reporting such cases, some countries refrain from reporting seizures of NPS.

Another problem is the comparability of quantities of different products seized. As in the case of other controlled substances, the best approach would be to convert all seizures of stimulant NPS into "standard doses", but the problem is that no standard doses have been established for most of those substances, because the majority of them are not used as pharmaceutical drugs. Nevertheless, stimulant NPS reported to date have roughly the same doses as other substances in the same group. This is in contrast to lysergic acid diethylamide (LSD), among hallucinogens, or fentanyl, among opioids, which have substantially different doses.

Information on the prevalence of NPS use is generally limited; information on the prevalence of stimulant NPS use, however, is even more sparse. In most household surveys, there tends to be an underestimation of the self-reported use of substances, and in the case of NPS, many users are unaware of what substance they have used. Therefore, drug use surveys are not an ideal tool for understanding the extent of stimulant NPS use in the general population, but they can provide broad information on trends in NPS use.

In the three years before 2017, mephedrone was the substance in the group that was seized in the greatest amount, reported by the Russian Federation: 0.7 tons in 2014; 3.1 tons in 2015; and 2 tons in 2016. Most stimulant NPS seized in 2013 concerned *meta*-chlorophenylpiperazine, which was mainly seized in Belgium.

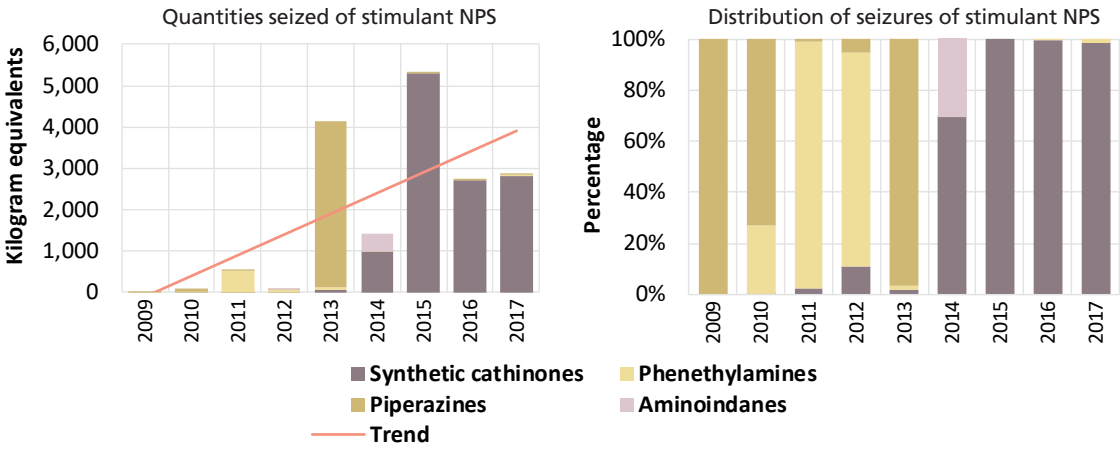
Overall, 33 countries reported seizures of NPS stimulants over the period 2013–2017. Some 82 per cent of the global total of stimulant NPS seized was seized in Europe, most notably by the Russian Federation, followed by Belgium and Spain. An additional 14 per cent was seized in Asia, most notably by Hong Kong, China, followed by Indonesia, the Philippines and Taiwan Province of China. Of the remainder, 2 per cent was seized in the Americas, most notably by the United States, followed by Canada; 1 per cent was seized in Africa, most notably by South Africa; and 1 per cent was seized in Oceania, most notably by Australia.

Once current stimulant NPS are combined with those that have been controlled in the years since 2015, the upward trend in the quantities of stimulant NPS seized over the 2009–2017 period becomes even more pronounced.

Over the period 2013–2017, 44 countries reported seizures of stimulants that were previously classified as NPS and are now under international control. The most important of such substances in terms of quantity seized were mephedrone, followed by MDPV; others, for which seizures are regularly reported, include methylone and, to a lesser extent, *N*-benzylpiperazine.

Seizures of mephedrone reached a peak of 4.2 tons in 2012, most of it reported by the United

FIG. 67 Quantities and distribution of stimulant NPS seized, 2009–2017*



Source: UNODC, responses to the annual report questionnaire.

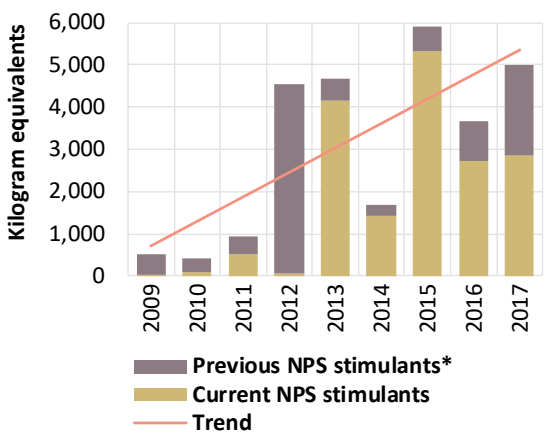
* *Substances currently not under international control.*

Kingdom, prior to its control at the international level in 2015.[233] The largest quantities of mephedrone seized over the period 2013–2017 were also reported by the United Kingdom, followed by the Russian Federation, India, Poland and Hong Kong, China. Mephedrone was reported to have been seized by 20 countries over this period.

The next-largest quantity seized of previous NPS stimulants was of MDPV, another cathinone, which reached a peak in 2013, two years before its international scheduling. Seizures of the substance were reported by 13 countries in Europe, North America and East and South-East Asia over the period 2013–2017.

After their international scheduling in 2015, the quantities of both mephedrone and MDPV seized remained substantially below the peaks reported prior to their international control. However, quantities of mephedrone seized have been rising since 2015, suggesting that there are still niche markets for the substance in various countries. By contrast, in 2017 seizures of MDPV reached their lowest level since reporting began in 2010. Only Canada reported some minimal seizures of MDPV in 2017.

FIG. 68 Quantities of current and previous* stimulant NPS seized, 2009–2017



Source: UNODC, responses to the annual report questionnaire.

**Substances that have been put under international control in the years since 2015.*

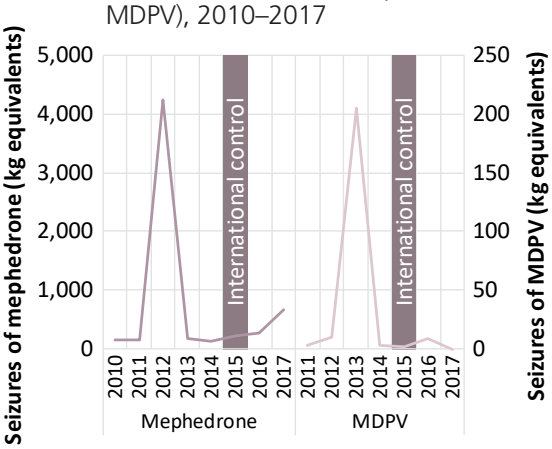
Demand for stimulant new psychoactive substances

Many stimulant NPS, like other types of NPS, are sold in a variety of forms in specialized shops. Often branded as "legal highs", they are sold on the Internet and the darknet[234, 235] and on illicit markets,

233 United Kingdom, "UK secures UN ban on 'legal high' mephedrone: UK-led proposal to introduce international controls on 'legal high' drug at UNODC Commission on Narcotic Drugs", 13 March 2015.

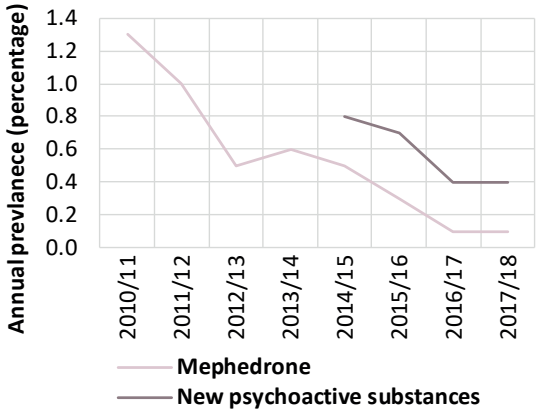
234 Cristina Miliano and others, "Neuropharmacology of new psychoactive substances (NPS): focus on the rewarding and reinforcing properties of cannabimimetics and amphetamine-like stimulants", *Frontiers in Neuroscience,* vol. 10, article No. 153 (April 2016).

FIG. 69 Quantities of recently controlled stimulant NPS seized (mephedrone and MDPV), 2010–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 70 Mephedrone and NPS use in the United Kingdom (England and Wales) among people aged 16–59, 2010–2018*



Source: Home Office, *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales, Statistical Bulletin No. 14/18* (London, July 2018), data tables.

**Data refer to the United Kingdom financial years: for example, "2017/18" refers to the period 1 April 2017 to 31 March 2018.*

sometimes under their own names or marketed falsely as controlled drugs, such as amphetamines, cocaine, "ecstasy" and benzodiazepines.[236] For example, NPS cathinones were often introduced into the market as an alternative to MDMA, amphetamines and cocaine because of their psychoactive stimulant effects.[237, 238]

In England and Wales, overall use of NPS has shown a significant downward trend since 2016, which is probably also valid for stimulant NPS. The prevalence of NPS use among the population aged 15–69 who reported having used such substances in the past year in England and Wales fell to 0.4 per cent in 2017/18 from 0.8 per cent in 2014/15. The decrease was even more pronounced among those aged 16–24, with the annual prevalence rate falling from 2.8 to 1.2 per cent.[239] This may have been prompted by the Psychoactive Substances Act, which came into force in the United Kingdom in 2016 and includes substances used for their psychoactive effects that do not fall under the Misuse of Drugs Act 1971, or are otherwise exempt from it. A review of this legislation revealed that the Psychoactive Substances Act resulted in an increase in the prices of NPS and a decrease in their availability. The Act also caused "head shops" to close or to no longer sell NPS. In addition, the annual prevalence of NPS use fell, including among people aged 16–24.[240]

Similarly, school survey data from the United States show a clear fall in the use of "bath salts" (synthetic cathinones)[241] following the implementation of new legislation that rendered their sale illegal as of

235 Cristina Miliano and others, "Sales and advertising channels of new psychoactive substances (NPS): Internet, social networks, and smartphone apps", *Brain Science*, vol. 8, No. 7 (July 2018).

236 EMCDDA, *European Drug Report 2017: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2017).

237 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*, EMCDDA Rapid Communication Series (Luxembourg, Publications Office of the European Union, 2017).

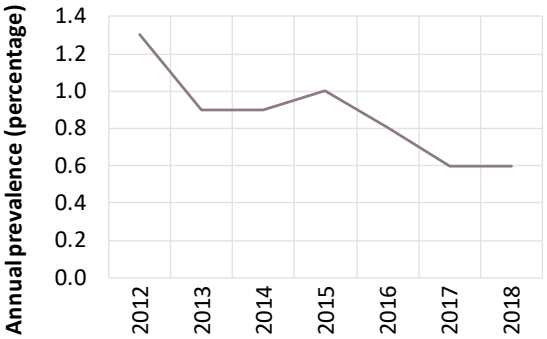
238 Matej Sande, "Characteristics of the use of 3-MMC and other new psychoactive drugs in Slovenia, and the perceived problems experienced by users", *International Journal of Drug Policy,* vol. 27 (2016), pp. 65–73.

239 United Kingdom, Home Office, *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales*, Statistical Bulletin No. 14/18 (London, July 2018), data tables.

240 United Kingdom, Home Office, *Review of the Psychoactive Substances Act 2016*, presented to Parliament pursuant to section 58 of the Psychoactive Substances Act 2016 (November 2018), pp. 4–5; *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales.*

241 United States, National Institute on Drug Abuse, DrugFacts, "Synthetic cathinones are 'Bath Salts'", February 2018.

FIG. 71 Use of bath salts (synthetic cathinones) among 12th grade students in the United States, 2012–2018



Source: United States, National Institute on Drug Abuse, "Monitoring the future study: trends in prevalence of various drugs". Available at www.drugabuse.gov.

2011.[242, 243] The annual prevalence of use of bath salts among 12th grade students fell by half between 2012 and 2018.[244]

Despite the diversity of the NPS market, only a few substances seem to have established markets of their own or have replaced conventional drugs.[245] People who use drugs may opt to use NPS based on different factors that include the substance's legal status as well as its availability, price and perceived psychoactive effects.[19, 247] Many NPS eventually disappear, possibly as a result of a combination of the following factors: adverse effects are experienced by users;[248, 249] the availability of the primary substance sought by people who are using NPS as an alternative increases; or the NPS is unable to establish a profitable market. However, some substances have remained on the market and created their own niche.

Among stimulant NPS, including stimulants that were previously classified as NPS but recently controlled, the most widely used synthetic cathinones in the European Union are mephedrone (also known as 4-MMC), 3-MMC, 4-methylethcathinone, pentedrone and pyrovalerone derivatives such as MDPV and *alpha*-PVP.[250, 251] The changes that have occurred in the mephedrone market in Europe, in particular in the United Kingdom, over the past decade provide an example of how NPS can establish their own market and how that market can evolve in response to control policies. Mephedrone was among the first NPS to emerge around 2007 and was marketed mainly as an alternative to MDMA or "ecstasy". As mentioned above, in 2010–2011, past-year use of mephedrone was reported as being 1.3 per cent among those aged 16–59 in the United Kingdom, the same rate of prevalence as "ecstasy".[252] After mephedrone was placed under control in the United Kingdom in 2010 and under international control in 2015,[253] its use among the general population declined considerably; in 2017–2018 its past-year prevalence was reported as being 0.1 per cent among those aged 16–59.[254]

242 In October 2011, the Drug Enforcement Administration temporarily banned three synthetic stimulants commonly found in bath salts as Schedule I substances under the Substance Control Act: MDPV, mephedrone and methylone.

243 Jennifer A. Gershman and Andrea D. Fass, "Synthetic cathinones ('Bath Salts') legal and health care challenges", *Pharmacy and Therapeutics,* vol. 37, No. 10 (October 2012), pp. 571–572, 595.

244 United States, National Institute on Drug Abuse, "Monitoring the future study: trends in prevalence of various drugs". Available at www.drugabuse.gov.

245 *World Drug Report 2018: Analysis of Drug Markets–Opiates, Cocaine, Cannabis, Synthetic Drugs* (United Nations publication, Sales No. E.18.XI.9 (Booklet 3)).

246 Lenka Vavrincikova and others, *New Psychoactive Substances Among People Who Use Drugs Heavily: Towards Effective and Comprehensive Health Responses in Europe–5-Country RAR Report* (Prague, New Psychoactive Substances in Europe and Department of Addictology, Charles University in Prague, 2016).

247 Rosalind Gittins and others, "Exploration of the use of new psychoactive substances by individuals in treatment for substance misuse in the UK", *Brain Science*, vol. 8, No. 4 (April 2018).

248 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

249 Sande, "Characteristics of the use of 3-MMC and other new psychoactive drugs in Slovenia".

250 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

251 Barbara Janikova and others, "New psychoactive substances among people who use drugs heavily in Europe: an inventory of changing drug consumption patterns, shifting drug markets and lagging policy responses", *Adiktologie,* vol. 16, No. 2 (June 2016), pp. 92–105.

252 Joanna Hockenhull, Kevin G. Murphy and Sue Paterson, "Mephedrone use is increasing in London", *The Lancet*, vol. 387, No. 10029 (April 2016), pp. 1719–1720.

253 "UK secures UN ban on 'legal high' mephedrone". Available at www.gov.uk.

254 *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales*.

While there is no evidence of current widespread use of stimulant NPS among the general population in Europe, it remains a practice in some subpopulation groups. For example, the injection of stimulant drugs, including synthetic cathinones, by a subgroup of men who have sex with men has raised public health concerns in recent years in Europe. This injecting behaviour, generally referred to as "slam" or "slamming", appears to take place primarily in the context of sex parties.[255]

In Slovenia, after the ban on mephedrone, experienced users, including those who were using NPS in nightlife settings, continued to seek the same effects in other NPS and were reported to have shifted to 3-MMC, methylone, 4-methylethcathinone and pentedrone, which were believed to have similar effects as mephedrone.[256] Furthermore, it has also been reported in Slovenia that 3-MMC is being used simultaneously with other opioids among people who inject drugs, often as a replacement for cocaine.[257, 258]

Synthetic cathinones, such as mephedrone, are sometimes also used in combination with other drugs such as GHB, GBL, crystalline methamphetamine, cocaine and sildenafil, with the purpose of reducing inhibitions and enhancing sexual experiences, as part of "chemsex" or sexualized drug use.[259, 260]

The stimulant NPS 4-FA is yet another example of a stimulant NPS that had temporary success on the drug market in some countries in Europe, but then only really established itself among small subpopulation groups. In the Netherlands, between 2007 and 2009, as the availability of MDMA had decreased, 4-FA was mainly sold as "amphetamine" or "ecstasy".[261] This changed after the MDMA and amphetamine markets rebounded in the Netherlands and 4-FA established its own niche market among users who reportedly preferred 4-FA over MDMA for its specific psychoactive effects.[262] There were also indications that the use of 4-FA had increased in other countries in Europe, such as Denmark, Germany and Spain.[263] The use of 4-FA was also reported among people who inject drugs in the needle and syringe programme in many countries in Europe.[264]

In Hungary, owing to the limited availability, low purity and high prices of established drugs such as heroin, amphetamines and cocaine, people who inject drugs have also switched to the use of synthetic cathinones. Among people who inject drugs, the proportion who injected amphetamine or heroin decreased from 95 per cent in 2009 to 13 per cent in 2015, while cathinones such as MDPV, mephedrone, pentedrone and methylone became the main substances injected in that country.[265] The practice of injecting synthetic cathinones is also reported by other countries in Europe, namely Austria, Finland, Germany, Latvia, Slovenia, Sweden and the United Kingdom.

Other patterns of stimulant NPS use among people who inject drugs in Europe have also been reported. In Belgium, among high-risk drug users, the most common NPS used include mephedrone, 2CB, methoxetamine, MDPV and 4-FA. The last of those is the most frequently used substance by people who inject drugs and attend a needle and syringe programme.[266] In Czechia, one third of high-risk drug users have reported the use of a cathinone or phenethylamine at least once, and 10.5 per cent

255 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

256 Sande, "Characteristics of the use of 3-MMC and other new psychoactive drugs in Slovenia".

257 Andrea Drev, ed., *Report on the Drug Situation 2015 of the Republic of Slovenia* (Ljubljana, National Institute of Public Health, 2015).

258 Matej Sande and Simona Šabic, "The importance of drug checking outside the context of nightlife in Slovenia", *Harm Reduction Journal,* vo. 15 (January 2018).

259 Raffaele Giorgetti and others, "When "Chems" meet sex: a rising phenomenon called "ChemSex"", *Current Neuropharmacology*, vol. 15, No. 5 (2017), pp. 762–770.

260 Claire Edmundson and others, "Sexualized drug use in the United Kingdom (UK): a review of literature", *International Journal of Drug Policy,* vol. 55 (May 2018), pp. 131–148.

261 Felix Linsen and others, "4-Fluoroamphetamine in the Netherlands: more than a one-night stand", *Addiction*, vol. 110, No. 7 (July 2015), pp 1138–1143.

262 Ibid.

263 See, for instance, *World Drug Report 2018.*

264 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study.*

265 Máté Kapitány-Fövény and J. Rácz, "Synthetic cannabinoid and synthetic cathinone use in Hungary: a literature review", *Developments in Health Science*vol. 1, No. 3 (November 2018), pp. 63–69.

266 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

have used them in the last 12 months, although only a very small proportion reported them as their primary drug. In Finland, people who inject drugs have also reported, as a pattern of polydrug use, the use of synthetic cathinones such as *alpha*-PVP and MDPV, along with their primary substance, such as amphetamines.[267]

Adverse effects and toxicity of stimulant new psychoactive substances

Studies that have documented the adverse effects of stimulant NPS report that nearly one quarter of users experience adverse effects after the administration of synthetic stimulants such as cathinones. Among the documented adverse effects of cathinones, the most common symptoms are hyperthermia, tachycardia, nausea, vomiting and chest pains, while many people with acute intoxication from synthetic stimulants suffer skin rashes and bruxism (clenched jaw and grinding teeth). Psychiatric manifestations account for a significant proportion of symptoms among people with intoxication from cathinones who require medical intervention. These symptoms include altered mental status, confusion, agitated delirium, anxiety, paranoia, delusions, dysphoria, depression and suicidal ideation. Self-harm without evidence of psychosis or depression is also associated with use of synthetic cathinones, hanging being the most common form, although gunshot wounds, self-inflicted stab wounds, repeated self-laceration and even slitting one's own throat have also been reported. The more serious symptoms of synthetic cathinone toxicity, which require substantial and prolonged medical treatment and in some cases lead to death, include the following: liver failure; kidney failure; rhabdomyolysis, a serious syndrome resulting from a direct or indirect muscle injury from the death of muscle fibres and release of their contents into the bloodstream; and the development of compartment syndrome, which involves the swelling of the muscular fascia compartments. Acute toxicity with cathinones, often involving concomitant use of other drugs, has been reported in many fatalities.[268, 269, 270, 271]

The injection of synthetic cathinones has also been linked with increased transmission of HIV and hepatitis C in many countries in Europe, including Hungary, Ireland and the United Kingdom; in Greece and Romania, the injection of these substances was identified in 2012 as a possible factor linked to outbreaks of HIV infection.[272]

267 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2018).

268 Vari and others, "New psychoactive substances".

269 Christopher L. German, Annette E. Fleckenstein and Glen R. Hanson, "Bath salts and synthetic cathinones: an emerging designer drug phenomenon", *Life Sciences*, vol. 97, No. 1 (February 2014), pp. 2–8.

270 Laurent Karila and others, "Synthetic cathinones: a new public health problem", *Current Neuropharmacology*, vol. 13, No. 1 (January 2015), pp. 12–20.

271 Vavrincikova and others, *New Psychoactive Substances Among People Who Use Drugs Heavily*.

272 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

TABLE 3 Annual prevalence of the use of cocaine,[a] by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**1,300,000**	**160,000**	**2,570,000**	**0.19**	**0.02**	**0.37**
Eastern Africa	-	-	-	-	-	-
Northern Africa	-	-	-	-	-	-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	250,000	1,000	633,000	0.09	0.00	0.24
Americas	**9,930,000**	**9,200,000**	**10,590,000**	**1.48**	**1.37**	**1.58**
Caribbean	180,000	80,000	330,000	0.62	0.29	1.15
Central America (excluding Mexico)	200,000	100,000	310,000	0.66	0.34	1.02
Northern America (including Mexico)	6,800,000	6,660,000	6,950,000	2.10	2.06	2.15
South America	2,740,000	2,360,000	3,000,000	0.95	0.82	1.04
Asia	**1,670,000**	**1,140,000**	**2,220,000**	**0.06**	**0.04**	**0.07**
Central Asia and Transcaucasia	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-
Near and Middle East/South-West Asia	70,000	30,000	130,000	0.02	0.01	0.04
Southern Asia	1,030,000	1,030,000	1,030,000	0.10	0.10	0.10
Europe	**4,740,000**	**4,460,000**	**5,140,000**	**0.87**	**0.82**	**0.95**
Eastern and South-Eastern Europe (including Turkey)	500,000	340,000	720,000	0.22	0.15	0.32
Western and Central Europe	4,240,000	4,120,000	4,420,000	1.33	1.29	1.39
Oceania	**430,000**	**410,000**	**440,000**	**1.65**	**1.57**	**1.67**
Australia and New Zealand	420,000	410,000	420,000	2.20	2.15	2.23
Melanesia	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-
Global	**18,070,000**	**15,380,000**	**20,960,000**	**0.37**	**0.31**	**0.42**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

[a] *Cocaine includes cocaine salt, "crack" cocaine and other types such as coca paste, cocaine base, "basuco", "paco" and "merla".*

TABLE 4 Global illicit cultivation of coca bush, 2007–2017 (hectares)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	28,900	30,500	30,900	31,000	27,200	25,300	23,000	20,400	20,200	23,100	24,500
Colombia [a]	99,000	81,000	73,000	62,000	64,000	48,000	48,000	69,000	96,000	146,000	171,000
Peru [b]	53,700	56,100	59,900	61,200	64,400						
Peru [c]					62,500	60,400	49,800	42,900	40,300	43,900	49,900
Total	**181,600**	**167,600**	**163,800**	**154,200**	**155,600** [d]	**133,700**	**120,800**	**132,300**	**156,500**	**213,000**	**245,400**

Sources: Plurinational State of Bolivia: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: national illicit crop monitoring system supported by UNODC. Peru: national illicit crop monitoring system supported by UNODC.

Note: Different area concepts and their effect on comparability were presented in the World Drug Report 2012 (United Nations publication, Sales No. E.12.XI.1) (p. 41-42). Efforts to improve the comparability of estimates between countries continue; since 2011 the net area under coca bush cultivation on the reference date of 31 December was estimated for Peru, in addition to Colombia. The estimate presented for the Plurinational State of Bolivia represents the area under coca cultivation as interpreted on satellite imagery.

[a] *Net area on 31 December.*
[b] *Figures represent the area under coca cultivation as interpreted on satellite imagery.*
[c] *Net area on 31 December, deducting fields eradicated after satellite imagery was taken.*
[d] *The global coca cultivation figure was calculated with the "area as interpreted on satellite imagery" for Peru in 2011.*

TABLE 5 Reported eradication of coca bush, 2007–2017

	Method of eradication	Unit	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	manual	hectare	5,484	6,341	8,200	10,509	11,044	11,407	11,144	11,020	6,577	7,237
Colombia	manual	hectare	96,003	60,565	43,804	35,201	30,456	22,121	11,703	13,473	17,642	52,001
	spraying	hectare	133,496	104,772	101,940	103,302	100,549	47,052	55,532	36,494	0	0
Peru	manual	hectare	10,143	10,025	12,033	10,290	14,171	23,785	31,205	35,868	30,150	25,784
Ecuador	manual	hectare	12	6	3	14	..	..	..	..	..	..
		plants	152,000	57,765	3,870	55,030	122,656	41,996	15,874	45,266	20,896	10,100

Source: United Nations Office on Drugs and Crime annual report questionnaire and government reports.

Note: The totals for Bolivia (Plurinational State of) and Peru include voluntary and forced eradication. Reported eradication refers to the sum of all areas eradicated in a year, including repeated eradication of the same fields. Two dots indicate that data are not available.

TABLE 6 Potential manufacture of 100 per cent pure cocaine, 2007–2017 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	*104*	*113*	..	..	..	..	..	..	..	..	..
Colombia	683	471	488	424	384	333	290	442	646	1,053	1,379
Peru	*290*	*302*	..	..	..	..	..	..	..	..	..
Total based on "old" conversion ratios[a]	**1,077**	**886**	**920**	**862**	**815**	**738**	**662**	**746**	**936**	**1,378**	**1,743**
Total based on "new" conversion ratios[a]	***1,317***	***1,143***	***1,188***	***1,134***	***1,090***	***997***	***902***	***943***	***1,124***	***1,586***	***1,976***

Sources: Plurinational State of Bolivia: own calculations based on coca leaf yield surveys by the United Nations Office on Drugs and Crime (UNODC) (Yungas de La Paz) and scientific studies by the Drug Enforcement Administration of the United States of America (Chapare). Colombia: UNODC/Government of Colombia. Peru: own calculations based on coca leaf to cocaine conversion ratio from scientific studies by the Drug Enforcement Administration. Detailed information on the ongoing revision of conversion ratios and cocaine laboratory efficiency is available in the World Drug Report 2010 (United Nations publication, Sales No. E.10.XI.13), p. 249.

[a] *Conversion of areas under coca cultivation into coca leaf and then into cocaine hydrochloride, taking yields, amounts of coca leaf used for licit purposes and cocaine laboratory efficiency into account.*

Notes: Owing to a lack of updated conversion factors in Bolivia (Plurinational State of) and Peru, no final estimates of the level of cocaine production can be provided.

With respect to data published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), the following amendments have been made: (a) data for Colombia (2005–2008) have been revised in order to ensure a consistent implementation of revisions to the methodology, affecting the way coca production is calculated, for the entire time series 2005–2015 (for details, see Colombia Coca Cultivation Survey Report 2014 (UNODC, 2015) and Colombia Survey of territories affected by illicit crops 2015, Annex 3 (UNODC 2016)); (b) totals for 2009–2012 based on "old" and "new" conversion ratios have been revised to rectify minor inaccuracies in data processing.

Figures in italics are subject to revision. Two dots indicate that data are not available. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

TABLE 7 Annual prevalence of the use of amphetamines,[a] by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**3,680,000**	**900,000**	**6,600,000**	**0.53**	**0.13**	**0.94**
Eastern Africa	-	-	-	-	-	-
Northern Africa	500,000	340,000	610,000	0.34	0.23	0.42
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	-	-	-	-	-	-
Americas	**7,860,000**	**6,660,000**	**9,230,000**	**1.17**	**0.99**	**1.38**
Caribbean	250,000	20,000	700,000	0.87	0.05	2.42
Central America (excluding Mexico)	60,000	30,000	100,000	0.21	0.09	0.31
Northern America (including Mexico)	6,840,000	5,990,000	7,690,000	2.11	1.85	2.38
South America	710,000	630,000	740,000	0.25	0.22	0.26
Asia	**14,140,000**	**4,980,000**	**23,290,000**	**0.47**	**0.17**	**0.78**
Central Asia and Transcaucasia	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-
Near and Middle East/South-West Asia	-	-	-	-	-	-
Southern Asia	1,850,000	1,850,000	1,850,000	0.18	0.18	0.18
Europe	**2,900,000**	**2,350,000**	**3,480,000**	**0.53**	**0.43**	**0.64**
Eastern and South-Eastern Europe (including Turkey)	710,000	410,000	1,040,000	0.32	0.18	0.46
Western and Central Europe	2,180,000	1,940,000	2,440,000	0.68	0.61	0.76
Oceania	**350,000**	**320,000**	**360,000**	**1.34**	**1.24**	**1.38**
Australia and New Zealand	250,000	250,000	250,000	1.34	1.34	1.34
Melanesia	-	-	-	-	-	-
Micronesia	5,400	1,900	10,500	1.58	0.56	3.10
Polynesia	-	-	-	-	-	-
Global	**28,920,000**	**15,210,000**	**42,960,000**	**0.59**	**0.31**	**0.87**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

[a] *Amphetamines include both amphetamine and methamphetamine.*

TABLE 8 Annual prevalence of the use of "ecstasy", by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**1,800,000**	**100,000**	**7,880,000**	**0.26**	**0.01**	**1.13**
Eastern Africa	-	-	-	-	-	-
Northern Africa	-	-	-	-	-	-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	-	-	-	-	-	-
Americas	**3,500,000**	**3,390,000**	**3,630,000**	**0.52**	**0.51**	**0.54**
Caribbean	60,000	30,000	100,000	0.23	0.10	0.36
Central America (excluding Mexico)	50,000	20,000	100,000	0.17	0.07	0.33
Northern America (including Mexico)	2,870,000	2,870,000	2,870,000	0.89	0.89	0.89
South America	510,000	470,000	550,000	0.18	0.16	0.19
Asia	**11,490,000**	**1,600,000**	**21,380,000**	**0.38**	**0.05**	**0.71**
Central Asia and Transcaucasia	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-
Near and Middle East/South-West Asia	-	-	-	-	-	-
Southern Asia	-	-	-	-	-	-
Europe	**4,060,000**	**2,930,000**	**6,970,000**	**0.54**	**0.39**	**0.93**
Eastern and South-Eastern Europe (including Turkey)	1,310,000	250,000	4,040,000	0.31	0.06	0.95
Western and Central Europe	2,750,000	2,680,000	2,930,000	0.86	0.84	0.92
Oceania	**440,000**	**410,000**	**450,000**	**1.68**	**1.56**	**1.72**
Australia and New Zealand	410,000	400,000	430,000	2.17	2.12	2.23
Melanesia	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-
Global	**21,290,000**	**8,420,000**	**40,310,000**	**0.41**	**0.16**	**0.78**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants controlled under the Convention on Psychotropic Substances of 1971 and from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues).

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine.

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage.

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride).

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking.

cocaine salt — cocaine hydrochloride.

drug use — use of controlled psychoactive substances for non-medical and non-scientific purposes, unless otherwise specified.

fentanyls — fentanyl and its analogues.

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available.

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin.

opioids — a generic term that refers both to opiates and their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body.

problem drug users — people who engage in the high-risk consumption of drugs. For example, people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) of the American Psychiatric Association, or the *International Classification of Diseases and Related Health Problems* (tenth revision) of WHO.

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. Harmful use of substances and dependence are features of drug use disorders. People with drug use disorders need treatment, health and social care and rehabilitation.

harmful use of substances — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a pattern of use that causes damage to physical or mental health.

dependence — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a cluster of physiological, behavioural and cognitive phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

substance or drug use disorders — referred to in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) as patterns of symptoms resulting from the repeated use of a substance despite experiencing problems or impairment in daily life as a result of using substances. Depending on the number of symptoms identified, substance use disorder may be mild, moderate or severe.

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once a person develops a drug use disorder, treatment, care and rehabilitation are needed.

REGIONAL GROUPINGS

The *World Drug Report* uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

- East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania and Mayotte
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia
- Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe and Reunion
- West and Central Africa: Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo and Saint Helena
- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Anguilla, Aruba, Bonaire, Netherlands, British Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Netherlands, Sint Eustatius, Netherlands, Sint Maarten, Turks and Caicos Islands and United States Virgin Islands
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- North America: Canada, Mexico, United States of America, Bermuda, Greenland and Saint-Pierre and Miquelon
- South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Republic of) and Falkland Islands (Malvinas)
- Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
- East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste, Viet Nam, Hong Kong, China, Macao, China, and Taiwan Province of China
- South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan
- Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, United Arab Emirates and Yemen
- South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka
- Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine
- South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, Serbia, Turkey and Kosovo
- Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Faroe Islands, Gibraltar and Holy See

  Oceania (comprising four subregions):
  - Australia and New Zealand: Australia and New Zealand
  - Polynesia: Cook Islands, Niue, Samoa, Tonga, Tuvalu, French Polynesia, Tokelau and Wallis and Futuna Islands
  - Melanesia: Fiji, Papua New Guinea, Solomon Islands, Vanuatu and New Caledonia
  - Micronesia: Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Guam and Northern Mariana Islands

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The *World Drug Report 2019* is again presented in five separate parts that divide the wealth of information and analysis contained in the report into individual reader-friendly booklets in which drugs are grouped by their psychopharmacological effect for the first time in the report's history.

Booklet 1 provides a summary of the four subsequent booklets by reviewing their key findings and highlighting policy implications based on their conclusions. Booklet 2 contains a global overview of the latest estimates of and trends in the supply, use and health consequences of drugs. Booklet 3 looks at recent trends in the market for depressants (including opioids, sedatives, tranquillizers and hypnotics), while Booklet 4 deals with recent trends in the market for stimulants (including cocaine, amphetamine-type stimulants and new psychoactive substances). Booklet 5 contains a review of recent trends in the market for cannabis and for hallucinogens. The section on cannabis also includes a review of the latest developments in the jurisdictions that have adopted measures allowing the non-medical use of cannabis.

As in previous years, the *World Drug Report 2019* is aimed at improving the understanding of the world drug problem and contributing towards fostering greater international cooperation for countering its impact on health, governance and security.

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